A Project Document of the
Advanced Transportation Controller Joint Committee

Comment Disposition Report for ATC 5201 Advanced Transportation Controller Standard Version 06

June 12, 2015

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American Association of State Highway and Transportation Officials (AASHTO)
444 North Capitol St. NW, Suite 249
Washington, DC 20001

Institute of Transportation Engineers (ITE)
1099 14th St. NW, Suite 300 West
Washington, DC 20005-3438

National Electrical Manufacturers Association (NEMA)
1300 N. 17th St., Suite 1847
Rosslyn, VA 22209-3801

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The purpose of this document is to summarize the result of the disposition of comments received from all interested parties regarding the ATC Controller Standard, User Comment Draft, v6.10.

Comment text has not been (purposefully) modified except for obvious typographical and/or editorial errors.

The disposition of these comments will be applied to a future revision of the ATC Controller Standard.

Inquiries, additional comments and proposed or recommended revisions should be submitted to:

Standards Development Engineer
Institute of Transportation Engineers
1099 14th Street, NW, Suite 300 West
Washington, DC 20005-3438

voice: 202-289-0222
fax: 202-289-7722

Notes for Comment Disposition Report, 6-12-2015

- added new comments 1-139 to 1-143 and 8-17 to 8-21
- incorporated result from third Online Survey of open Level 0 and 1 comments
- provided additional disposition details where appropriate

Notes for Updated Release, 9-3-2014

- added new comments 1-138, 10-55, and 10-56
- incorporated result from second Online Survey of open Level 0 and 1 comments

Notes for Updated Release, 5-28-2014

- revised selective Level 0 and 1 comments to incorporate additional or modified material provided by commenters
- added "Survey? NO" field to selected Level 0 and 1 comments to indicate comment NOT released to survey by commenter
- added Commenter's Notes section to selected Level 0 and 1 comments
- incorporated result from first Online Survey of open Level 0 and 1 comments

Notes for Updated Release, 2-6-2014

- added Priority Definitions

  3: Comment resolution is critical to successful implementation
  2: Comment resolution could have a significant impact on successful implementation
  1: Comment resolution will likely have a minimal impact on successful implementation
  0: Comment resolution will likely have no impact on successful implementation
  ---: (comment closed and/or resolved)

  'Comment resolution' implies implementation of recommended solution or agreed-upon alternative.
  -OR-
  Ask the question: if this comment had not been submitted, how important (on a scale of 0-3) would the inclusion of the comment be to the successful implementation of an ATC controller?

- added 'Discussion' section to contain interim WG discussion elements for comments which are not fully disposed and closed

- commenter IDs:

  1: Peter Ragsdale
  2: Clyde Neel (Naztec)
  3: Robin Harrison (Peek)
  4: Jim Rose (Econolite)
  5: Doug Spencer
  6: Noblis
  7: Bob Rausch (Transcore)
  8: Mike Gallagher (Intelight)
  9: Scott Evans (EDI)
  10: Doug Tarico (McCain)

ID#:	1-1 *(updated 5-28-2014)*	**Status:**	Closed
Commenter:	CID1	**Priority**:	1
Comment Type:	Editorial	**Survey?**:	NO
Page:	General		
Section:	(n/a)		

Issue

Section numbers should not have been changed from v5.2b as this complicates traceability and use of agencies (when trying to update specifications).

Proposed Solution

Revert section numbers back to those found in ATC v5.2b. If a new section/subsection is added then it should be placed at the end. Deleted sections should have their text changed to "This section has been deleted (v06.10)" . This will greatly improve document usability over the next 10 years.

Disposition

Proposed solution rejected by WG leadership as out of scope.
Going forward, section and subsection numbers to remain constant from release to release.

ID#:	1-2	**Status:**	Closed
Commenter:	CID1	**Priority**:	---
Comment Type:	Editorial		
Page:	10		
Section:	1.2		

Issue

Users don't want "controllers that **comply** with it" (1st sentence) but rather want "controllers that **conform** with it. "Compliance" is an informal term generally accepted to mean the system provides support for some of a given standard. This allows a manufacturer to take significant liberties and create a non-conformant product.

Proposed Solution

1. Change "comply" to "conform" in 1st sentence.
2. Change "compliance" to "conformance" in the second paragraph.

Disposition

Change all 'comply' to 'conform' (in all forms) throughout standard.

ID#:	1-3 *(updated 5-28-2014)*	**Status:**	Closed
Commenter:	CID1	**Priority**:	0
Comment Type:	Editorial	**Survey?**:	NO
Page:	10		
Section:	1.2		

Issue

Further (to #2), only controllers that are conformant to the standard should be able to use “ATC” or reference the standard (ITE owns the “ATC” copyright).

Proposed Solution

Standard should include text cautioning manufacturers that they cannot call their product(s) “ATC” unless the product actually conforms to the standard.

Disposition

Rejected by WG leadership (copyright not possible).

ID#:	1-4	**Status:**	Closed
Commenter:	CID1	**Priority**:	---
Comment Type:	Editorial		
Page:	12		
Section:	“FLASH”		

Issue

The definition includes links to external sources that can change. The links have no controls or date/version identification.

Proposed Solution

Remove the external links.

Disposition

Hard web links to be removed from all references.

ID#:	1-5	**Status:**	Closed
Commenter:	CID1	**Priority**:	---
Comment Type:	Editorial		
Page:	15		
Section:	1.5		

Issue

There are more than “three section” in the standard.

Proposed Solution

Update to reflect correct # of sections.

Disposition

Change as proposed.

ID#:	1-6	**Status:**	Closed
Commenter:	CID1	**Priority**:	---
Comment Type:	Editorial		
Page:	16		
Section:	2.1		

Issue

2nd and 3rd sentence repeat the 1st sentence.

Proposed Solution

Delete the 2nd and 3rd sentences.

Disposition

Change as proposed.

ID#:	1-7	**Status:**	Closed
Commenter:	CID1	**Priority**:	---
Comment Type:	Editorial		
Page:	16		
Section:	2.1		

Issue

2nd paragraph states that a benefit of open-architecture is “reduced-cost’ … this is not true in a lot of cases. It also states that closed-architecture has “higher pricing” … this is not true also.

Proposed Solution

1. Remove text: “and reduced cost”.
2. Remove text: “higher pricing”.

Disposition

Change as proposed.

ID#:	1-8 *(updated 5-28-2014)*	**Status:**	Closed
Commenter:	CID1	**Priority**:	0
Comment Type:	Editorial	**Survey?**:	NO
Page:	17		
Section:	2.1		

Issue

(top of page) – "An additional benefit is that runtime license fees do not apply in these circumstances helping to reduce the cost to the user." is misleading … the application programs may have license and so may specific elements of the manufacturer developed firmware. Only the open-source software might be run-time license free.

Disposition

Change 'do not apply' to 'may not apply'.

ID#:	1-9	**Status:**	Closed
Commenter:	CID1	**Priority**:	---
Comment Type:	Editorial		
Page:	17		
Section:	2.1		

Issue

Change “compliant” to “conformant”.

Proposed Solution

Change “compliant” to “conformant”.

Disposition

Change as proposed.

ID#:	1-10	**Status:**	Closed
Commenter:	CID1	**Priority**:	---
Comment Type:	Editorial		
Page:	20		
Section:	2.2		

Issue

Change “and or” to “and/or”.

Proposed Solution

Change “and or” to “and/or”.

Disposition

Change as proposed.

ID#:	1-11 *(updated 5-28-2014)*	**Status:**	Closed
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical	**Survey?**:	NO
Page:	27		
Section:	2.5		

Issue

Security needs to be addressed … we cannot keep burying our head in the sand. The ATC and NTCIP standards are published and freely available to the general public and, as such, we must take precautions. TEES 2009 has taken a first step maybe we can build upon it.

Proposed Solution

Include security features, possibly starting with what TEES 2009 includes and enhance from there.

Disposition

Proposed solution rejected by WG leadership as out of scope.

ID#:	1-12	**Status:**	Closed
Commenter:	CID1	**Priority**:	3
Comment Type:	Technical		
Page:	30		
Section:	3.1.3		

Issue

The API defines additional clock source options that the ATC needs to support including: ATC_TIMESRC_RTCSQWR, ATC_TIMESRC_CRYSTAL, ATC_TIMESRC_EXTERNAL1, and ATC_TIMESRC_EXTERNAL2. Need to add these options.

Proposed Solution

Add the following explanation for how the additional clock sources work:

- RTC as the clock source (ATC_TIMESRC_RTCSQWR): This is an optional mode and if supported by the RTC hardware device on the engine board then it shall be included and function as follows. All timing functions and time keeping functions including OST shall be referenced to the RTC hardware and may include utilizing a pulsing output or alarm from the RTC device as a clock tick if desired. Note that the OST will always exactly match the RTC in this mode. If this mode is not supported by the engine board RTC hardware device, then the ATC shall use the engine board processor crystal as its clock source for OST (ATC_TIMESRC_CRYSTAL).

- Processor crystal as clock source (ATC_TIMESRC_CRYSTAL): All timing functions and time keeping functions including OST shall be referenced to the engine board processor crystal.

- GPS as clock source (ATC_TIMESRC_EXTERNAL1): All timing functions and time keeping functions including OST shall be referenced to the external GPS time source connected to serial port SPx using the NMEA 0183 protocol. The BSP shall include a driver to query the GPS unit as needed to ensure that the OST does not drift more than 0.001 seconds from GPS time and such that the testing requirements stated herein can be satisfied. If the GPS supports a Pulse Per Second (PPS) output then it shall be connected to the serial port DCD signal. If the BSP driver detects the PPS signal then it shall use the PPS signal as the clock tick for the OST. If communications with the GPS unit are interrupted or the GPS indicates that it is not synchronized with sufficient satellites to determine the time accurately, then the ATC shall use the RTC as its clock source for OST (ATC_TIMESRC_RTCSQWR).

- Other source as clock source (ATC_TIMESRC_EXTERNAL2): All timing functions and time keeping functions including OST shall be referenced to a manufacturer provided mechanism that uses an external device/mechanism as its clock source (e.g. NTP, WWV, etc). The BSP shall include any necessary drivers to query the clock source as needed to ensure that the OST does not drift more than 0.001 seconds from time provided by the external source. If communications with the external source are interrupted, then the ATC shall use the RTC as its clock source for OST (ATC_TIMESRC_RTCSQWR).

Disposition

Replace the relevant portions of Appendix B.7 with the following text:

ATC_TOD_SET_TIMESRC

This command sets the time source for the TOD driver.

External time references, such as NTP and GPS, may be used to set controller time but are not directly supported by the TOD driver. When an external time reference is in use, set the TOD driver time source to ATC_TIMESRC_CRYSTAL to allow standard Linux timekeeping functions to operate normally.

Guidance: The ATC Application Programming Interface (API) may provide direct support for the use of external time references.

Available time sources:

ATC_TIMESRC_LINESYNC
(LINESYNC pulses from AC power line)

ATC_TIMESRC_RTCSQWR
(square wave output from Real Time Clock (RTC) IC

ATC_TIMESRC_CRYSTAL
(primary microprocessor crystal)
(standard Linux timekeeping function)

ATC_TIMESRC_EXTERNAL1
(deprecated, non-functional)

ATC_TIMESRC_EXTERNAL2
(deprecated, non-functional)

ID#:	1-14 *(updated 5-28-2014)*	**Status:**	Closed
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical	**Survey?**:	NO
Page:	30		
Section:	3.1.5		

Issue

(last bullet): I do not see where this standard specifies how the following will be completed – "Presence of … BSP support for NTCIP transfers through communications port".

Proposed Solution

Either remove reference to BSP support or describe/document how the BSP accomplishes this.

Disposition

Remove "and/or BSP support".

ID#:	1-15 *(updated 5-28-2014)*	**Status:**	Closed
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical	**Survey?**:	NO
Page:	30		
Section:	3.1.6		

Issue

(last bullet): I do not see where this standard specifies how the following will be completed – "Presence of … BSP support for NTCIP transfers through communications port".

Proposed Solution

Either remove reference to BSP support or describe/document how the BSP accomplishes this.

Disposition

Remove "and/or BSP support".

ID#:	1-16 *(updated 5-28-2014)*	**Status:**	Closed
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical	**Survey?**:	NO
Page:	30		
Section:	3.1.7		

Issue

(last bullet): I do not see where this standard specifies how the following will be completed – "BSP description of controller resident operator interface software to control other applications tasks (start/stop/run time/etc.)."

Proposed Solution

Either remove reference to last bullet ("BSP description") or describe/document how the BSP accomplishes this.

Disposition

Remove "and/or BSP support".

ID#:	1-17	**Status:**	Closed
Commenter:	CID1	**Priority**:	---
Comment Type:	Technical		
Page:	31		
Section:	3.1.8		

Issue

In my opinion, SRAM should not be specified for use as “long term retention of data”.

Proposed Solution

Remove first bullet or add caution, etc that SRAM should not be considered non-volatile.

Disposition

Change section heading (remove “long term”).
Add language to standard which denotes SRAM for short-term retention and FLASH for long-term retention.

ID#:	1-18	**Status:**	Closed
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical		
Page:	32		
Section:	3.2.1		

Issue

1st bullet says “asynchronous **or** synchronous” yet section 4.4.3 requires each port to support both asynchronous **and** synchronous communications.

Proposed Solution

1. Correct standard for consistency.
2. Preferably, remove the requirement of SDLC and HDLC from both SP1 and SP2 (at a minimum).

Disposition

Change ‘or’ to ‘and’ in first bullet.
See Comments 1-30 and 1-31 for updated synchronous requirements for SP1 and SP2.

ID#:	1-19	**Status:**	Closed
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical		
Page:	32		
Section:	3.2.2		

Issue

1st bullet says “asynchronous **or** synchronous” yet section 4.4.3 requires each port to support both asynchronous **and** synchronous communications.

Proposed Solution

1. Correct standard for consistency.
2. Preferably, remove the requirement of SDLC and HDLC from both SP1 and SP2 (at a minimum).

Disposition

Change ‘or’ to ‘and’ in first bullet.
See Comments 1-30 and 1-31 for updated synchronous requirements for SP1 and SP2.

ID#:	1-20	**Status:**	Closed
Commenter:	CID1	**Priority**:	---
Comment Type:	Editorial		
Page:	33		
Section:	3.3.2.1		

Issue

Wording of 1st bullet is awkward ("…being mounted in rack cabinet including…").

Proposed Solution

Reword sentence.

Disposition

Change as proposed.

ID#:	1-21	**Status:**	Closed
Commenter:	CID1	**Priority**:	---
Comment Type:	Editorial		
Page:	35		
Section:	4.1.1		

Issue

The 5th paragraph isn't really guidance.

Proposed Solution

Suggest that paragraph be deleted.

Disposition

Change as proposed.

ID#:	1-22	**Status:**	Closed
Commenter:	CID1	**Priority**:	---
Comment Type:	Editorial/Technical		
Page:	36		
Section:	Figure 4-1		

Issue

1. What does a dotted line mean vs. a solid line? At first I thought that it meant "optional" vs. mandatory but that is not always the case.
2. I find the figure too "light" to read easily.
3. Also, "2070 ATC Modem Modules" is incorrect … a 2070 is not an ATC.

Proposed Solution

1. Include a legend.
2. "Darken" the figure.
3. Change to either "2070 Modem modules" or just "Modem Modules".

Disposition

Make all dotted blocks solid.
Add comment that all features may not be included in every ATC.
Modules to be called "Model 2070 Modules".
Change hubs to switches.

ID#:	1-23	**Status:**	Closed
Commenter:	CID1	**Priority**:	---
Comment Type:	Editorial		
Page:	39		
Section:	Figure 4-3		

Issue

The words “maximum” and “envelope” are each split across two lines.

Proposed Solution

Adjust text box size, font size, etc so that each word remains intact on a single line.

Disposition

Change as proposed.

ID#:	1-24	**Status:**	Closed
Commenter:	CID1	**Priority**:	---
Comment Type:	Technical		
Page:	39		
Section:	4.2.2		

Issue

It should be required that “keyed” connectors must be used. It is possible for someone to use plain headers, etc as they will be compatible.

Proposed Solution

Change text to specifically state that keyed connectors must be used for all connectors (both host and engine board).

Disposition

DIN as suggested satisfies keying. Non-DIN is non-compliant.
Change “These connectors” to describe both EB and host connectors as the relevant DIN connectors.

ID#:	1-25	**Status:**	Closed
Commenter:	CID1	**Priority**:	2
Comment Type:	Technical		
Page:	41		
Section:	4.3.1		

Issue

Suggest that 60 MIPS may not be enough processing power unless the processor and/or support hardware natively supports the required communication interfaces, especially at the baud rates specified.

Proposed Solution

There are several items for consideration here:

1. The MIPS rating should probably be increased to, say, 300 MIPS minimum. This also supports the use of more current processors/technologies and hence will provide longer product service life to Agency purchased products. Also, we do not know the implications of using the API and running several concurrent applications simultaneously.
2. It should be stated that the hardware must natively support the required communications interfaces. For example, one could “bit-bang” the SDLC for all serial ports simultaneously but this would probably bring a 60 MIPS processor to its knees while performing the communications test specified in Chapter 8.

Disposition

Use mimimum Coremark of 500 as processor performance benchmark.

Provide procurement guidance in a relevant section.

Procurement Guidance

The ATC controller standard requires the use of a minimum version of Linux and the inclusion of a Board Support Package (BSP). Agencies specifying the use of an ATC need to recognize that the ATC standard does not prescribe a specific processor, processor clock speed, or a specific version of Linux; as a result, existing software may not be compatible with fully conformant ATCs from all vendors. Agencies should expect that the application software may need to be compiled and linked for the specific hardware, board support package, and version of Linux supplied since the object code may not be compatible for different processors. Further, some software may require modifications for specific hardware/platform [Linux and BSP] configurations. When purchasing ATC controller hardware separately from the application software, the agency may require software support services from their software vendor to verify compatibility, test the application, or to modify their application software for the specific platform and vendor chosen.

It is essential to understand that the ATC is a functional standard that identifies minimum requirements with a variety of options and does not attempt to limit the features and future capabilities of the ATC while attempting to establish an interoperable platform. Agencies [Procuring Authorities] also need to recognize that it is inappropriate for a procurement specification to require the hardware vendor to ensure compatibility with a software package from another vendor [typically a competitor] or the agency itself, unless the source code is provided to the hardware vendor. Technology today advances rapidly and it is not unusual for hardware obsolescence to outpace the life of the product in traffic control devices. The ATC standard has been structured to allow for advances in technology (hardware and software) and to allow designs to change over time to adopt newer and better technology, which is sometimes necessitated by the obsolescence of key components. Such changes may require modifications to the application software.

ID#:	1-26 *(updated 5-28-2014)*	**Status:**	Closed
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical	**Survey?**:	NO
Page:	42		
Section:	4.3.3 “FLASH”		

Issue

The total access time for FLASH should be 100 ns maximum including wait states, whereas the text implies that the wait states are limited to 100 ns which allows for a wide range of (slow) speed devices to be used without restriction.

Proposed Solution

Change text so that total access time is 100 ns maximum.

Disposition

Replace Section 4.3.3 with the following text:

Long-Term Non-Volatile Memory

The engine board shall contain a minimum of 16 MB of Long-Term Non-Volatile memory (e.g. FLASH) for application and O/S program storage. This memory shall i) not require power for data retention purposes, ii) use a segmented architecture allowing erasing, writing and reading of individual segments, iii) have a data retention period of no less than 10 years, and iv) a minimum of 10,000 program/erase cycles (use of ECC is permitted).. This memory shall support a sequential read access rate of 20 MB/s minimum when tested reading 4KB (aligned) blocks. All Long-Term Non-Volatile memory available for application program storage shall be formatted and mounted by the manufacturer and immediately available for use.

Application software shall be capable of reading from and writing to the Long-Term Non-Volatile memory without the memory being corrupted by the power fail conditions specified in Section 4.4.1.

Volatile / Dynamic RAM (DRAM)

The engine board shall contain a minimum of 64 MB of DRAM or equivalent Volatile memory for application and O/S program execution. This memory system shall not be required to support data retention if VPRIMARY is not as specified in Section 4.4.1, the Engine Board processor is being reset, or during a “long power outage” as defined in Section 4.4.1. This memory subsystem shall support the performance requirements specified throughout this document.

Short-Term Non-Volatile Memory

The engine board shall contain a minimum of 1 MB of Short-Term Non-Volatile memory (e.g. SRAM) for parameter storage. This memory i) may require power for data retention purposes, ii) shall not be corrupted by short power outages or if the Engine Board processor is being held in reset, iii) the device life/performance shall not degrade over time or be affected by read/write activity, iv) shall support sequential read/write access rates of 10 MB/s minimum when tested accessing 4KB (aligned) blocks, v) access to the memory shall be . In the absence of VPRIMARY, the Short-Term Non-Volatile memory shall be supported and maintained by VSTANDBY_5 or by an on-board standby power source. Data shall be retained during the absence of Service Power for at least the time period specified in Section 3.1.9 or while standby power is above 2.0V.

Update FLASH/DRAM/SRAM references throughout standard.
Update standby power references as needed throughout standard.
See Comment 10-2 for an updated requirement on standby power.

ID#:	1-27 *(updated 5-28-2014)*	**Status:**	Closed
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical	**Survey?**:	NO
Page:	42		
Section:	4.3.3 “SRAM”		

Issue

1. The total access time for SRAM should be 100 ns maximum including wait states, whereas the text implies that the wait states are limited to 100 ns which allows for a wide range of (slow) speed devices to be used without restriction.
2. First sentence incorrectly implies that the SRAM is “permanent” non-volatile memory.
3. SRAM may also be maintained by an on-board standby voltage following depletion of VSTANDBY_5.

Proposed Solution

1. Change text so that total access time is 100 ns maximum.
2. Change 1st sentence to “… for temporary non-volatile parameter storage”
3. Change last sentence to “… maintained by VSTANDBY_5 and/or a local standby voltage source on the engine board”.

Disposition

(See disposition of Comment ID# 1-26)

ID#:	1-28	**Status:**	Closed
Commenter:	CID1	**Priority**:	---
Comment Type:	Technical		
Page:	42		
Section:	4.3.4		

Issue

RTC may also be maintained by an on-board standby voltage following depletion of VSTANDBY_5.

Proposed Solution

Change the 4th sentence to "…In the absence of VPRIMARY the RTC shall operate from VSTANDBY_5 and/or a local standby voltage source on the engine board".

Disposition

Add statement(s) throughout standard (as needed) regarding allowance of on-board standby source.

ID#:	1-29 *(updated 5-28-2014)*	**Status:**	Closed
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical	**Survey?**:	NO
Page:	45		
Section:	4.4.3; 8.1.1		

Issue

For clarity of communications testing of Ethernet ports, it should clearly state that the both the 10% and 3% load numbers are for each engine board port.

Proposed Solution

Change text to “Each port at 10% loading and 3% load average hits per port to the processor per minute” (or similar).

Disposition

See Comment 1-131.

ID#:	1-30 *(updated 5-28-2014)*	**Status:**	Closed
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical	**Survey?**:	NO
Page:	45		
Section:	4.4.3 (SP1)		

Issue

1. No deployed application of SP1 has used SDLC or HDLC to date and therefore I suggest that they be removed.
2. Further suggest that all synchronous communications be removed from the port.
3. Suggest that 57.6k and 115.2k should be mandatory (not optional) for async.
4. Suggest adding 230.4k as mandatory baud rate.

Proposed Solution

1. Remove “SDLC” & “HDLC” from “Operating Modes”.
2. Remove “SYNC” from “Operating Modes”. Also remove “Synchronous Rates”, and remove the pin allocations for clock signals (mark as Reserved).
3. Remove the word “Optional” from the async baud rate list.
4. Add 230.4k to the async baud rate list.

Disposition

Rates 57.6k and 115.2k are now mandatory; 230.4k now optional.

All synchronous protocol support on SP1 shall be optional within the Standard. ATC Host Modules that do not provide synchronous protocol support on SP1 shall provide a 10K pullup resistor to +5V for each SP1 clock input to the Engine Board. Engine Boards which do not include synchronous protocol support on SP1 shall provide a 10K pullup resistor to +5V for each SP1 clock output from the Engine Board.

ID#:	1-31	**Status:**	Closed
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical		
Page:	45		
Section:	4.4.3 (SP2)		

Issue

1. No deployed application of SP2 has used SDLC or HDLC to date and therefore I suggest that they be removed.
2. Further suggest that all synchronous communications be removed from the port.
3. Suggest that 57.6k and 115.2k should be mandatory (not optional) for async.
4. Suggest adding 230.4k as mandatory baud rate.

Proposed Solution

1. Remove “SDLC” & “HDLC” from “Operating Modes”.
2. Remove “SYNC” from “Operating Modes”. Also remove “Synchronous Rates”, and remove the pin allocations for clock signals (mark as Reserved).
3. Remove the word “Optional” from the async baud rate list.
4. Add 230.4k to the async baud rate list.

Disposition

Rates 57.6k and 115.2k are now mandatory; 230.4k now optional.

All synchronous protocol support on SP2 shall be optional within the Standard. ATC Host Modules that do not provide synchronous protocol support on SP2 shall provide a 10K pullup resistor to +5V for each SP2 clock input to the Engine Board. Engine Boards which do not include synchronous protocol support on SP2 shall provide a 10K pullup resistor to +5V for each SP1 clock output from the Engine Board.

ID#:	1-32 *(updated 5-28-2014)*	**Status:**	Closed
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical	**Survey?**:	NO
Page:	46		
Section:	4.4.3 (SP3)		

Issue

1. No deployed application of SP3 has used SDLC or HDLC to date and therefore I suggest that they be removed.
2. Further suggest that all synchronous communications be removed from the port. Possibly one could substitute CAN bus instead.
3. Suggest that 57.6k and 115.2k should be mandatory (not optional) for async.
4. Suggest adding 230.4k as mandatory baud rate.

Proposed Solution

1. Remove “SDLC” & “HDLC” from “Operating Modes”.
2. Remove “SYNC” from “Operating Modes”. Also remove “Synchronous Rates”, and remove the pin allocations for clock signals (mark as Reserved). Add CAN Bus (possibly using the RX clock and TX clock pins for the data lines).
3. Remove the word “Optional” from the async baud rate list.
4. Add 230.4k to the async baud rate list.

Disposition

Rates 57.6k and 115.2k are now mandatory; 230.4k now optional.

The minimum required synchronous protocol to be supported on SP3 is SDLC. Reference IBM Document GA27-3093-3.

ID#:	1-33	**Status:**	Closed
Commenter:	CID1	**Priority**:	---
Comment Type:	Technical		
Page:	46		
Section:	4.4.3 (SP4)		

Issue

Suggest adding 230.4k as mandatory baud rate.

Proposed Solution

Add 230.4k to the async baud rate list.

Disposition

230.4k rate now optional.

ID#:	1-34 *(updated 5-28-2014)*	**Status:**	Closed
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical	**Survey?**:	NO
Page:	46		
Section:	4.4.3 (SP5)		

Issue

1. No deployed application of SP5 has used HDLC to date and therefore I suggest that they be removed.
2. Suggest that ASYNC be restored as an Operating Mode (required by TEES2009) as it provides an internal option that manufacturers could use. Baud rates should be from 1.2k to 230.4k

Proposed Solution

1. Remove “HDLC” from “Operating Modes”.
2. Add “ASYNC” to “Operating Modes”. Also add “Asynchronous Rates” as specified.

Disposition

Asynchronous operation restored. Rates 1.2k - 115.2k now mandatory; 230.4k optional.

The minimum required synchronous protocol to be supported on SP5 is SDLC. Reference IBM Document GA27-3093-3.

ID#:	1-35	**Status:**	Closed
Commenter:	CID1	**Priority**:	---
Comment Type:	Technical		
Page:	46		
Section:	4.4.3 (SP6)		

Issue

Suggest adding 230.4k as mandatory baud rate.

Proposed Solution

Add 230.4k to the async baud rate list.

Disposition

230.4k now optional.

ID#:	1-36 *(updated 5-28-2014)*	**Status:**	Closed
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical	**Survey?**:	NO
Page:	46		
Section:	4.4.3 (SP8)		

Issue

1. No deployed application of SP8 has used SYNC or HDLC to date and therefore I suggest that they be removed.
2. Further suggest that all SDLC be removed from SP8. Possibly one could substitute CAN bus instead.
3. Suggest that 57.6k and 115.2k should be mandatory (not optional) for async.
4. Suggest adding 230.4k as mandatory baud rate.

Proposed Solution

1. Remove “SDLC” & “HDLC” from “Operating Modes”.
2. Remove “SYNC” from “Operating Modes”. Also remove “Synchronous Rates”, and remove the pin allocations for clock signals (mark as Reserved). Add CAN Bus (possibly using the RX clock and TX clock pins for the data lines).
3. Remove the word “Optional” from the async baud rate list.
4. Add 230.4k to the async baud rate list.

Disposition

Asynchronous operation restored. Rates 1.2k - 115.2k now mandatory; 230.4k optional.

The minimum required synchronous protocol to be supported on SP8 is SDLC. Reference IBM Document GA27-3093-3.

ID#:	1-37 *(updated 5-28-2014)*	**Status:**	Closed
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical	**Survey?**:	NO
Page:	47		
Section:	4.4.3 (SPI)		

Issue

Suggest that an SD card slot be included on the engine board for data logging purposes, etc (similar to TEES 2009 9.2.5.11).

Proposed Solution

Add SD socket requirement and include support in kernel configuration. Suggest that SPI encoded address 3 be used.

Disposition

SD socket is now optional. Physical access external to the controller is NOT required but is permitted.
If socket is located on the Engine Board, any electrical interface can be used.
If socket is located on the Host Board, the interface shall use the SPI interface
If SPI interface is used, use SPI_SEL_3 (Encoded SPI Address 4) for select line in support of non-encoded hosts.

Modified Section 4.3.3 and added new Section 4.4.6.

ID#:	1-38 *(updated 5-28-2014)*	**Status:**	Closed
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical	**Survey?**:	NO
Page:	47		
Section:	4.4.3 (SPI)		

Issue

Suggest that support for programming Host board Ethernet switches be provided in a standard manner.

Proposed Solution

Suggest that SPI encoded address 4 be used for the 1st physical switch and SPI address 5 be used for the 2nd physical switch, if one exists. Host manufacturer shall provide documentation on how to configure the switch(s) in their User manual with a preference being to providing an open-source driver/example.

Disposition

See Comment 4-20 for disposition in concert with other SPI changes.

ID#:	1-39	**Status:**	Closed
Commenter:	CID1	**Priority**:	---
Comment Type:	Technical		
Page:	49		
Section:	4.4.3 (Ethernet)		

Issue

(Guidance): Do not require the use of hubs but rather specify that switches shall be used.

Proposed Solution

Change “Independent hubs…” to “Logical independent switches … “.

Disposition

Change hub to switch.

ID#:	1-40	**Status:**	Closed
Commenter:	CID1	**Priority**:	---
Comment Type:	Technical		
Page:	50		
Section:	4.4.5 (new section)		

Issue

I suggest that all engine boards moving forwards have the version of the standard that they are conformant to printed on them in the silkscreen to avoid future confusion as the standard evolves.

Proposed Solution

Add requirement for standard number to be labeled on the Engine Board silkscreen (top side).

Disposition

Engine Board to be labeled with ATC revision level. Silkscreen labling NOT required.

ID#:	1-41	**Status:**	Closed
Commenter:	CID1	**Priority**:	---
Comment Type:	Editorial		
Page:	51		
Section:	5.1		

Issue

The 2nd bullet of the 3rd list is confusing since it refers to the “Front panel” which is a specific device within the ATC standard.

Proposed Solution

Change “Front panel” to “Faceplate”.

Disposition

Change as proposed.

ID#:	1-42 *(updated 5-28-2014)*	**Status:**	Closed
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical	**Survey?**:	NO
Page:	58		
Section:	C50J		

Issue

Are requiring EIA-232 compatible signals or EIA-562?

Proposed Solution

Suggest change to EIA-562 due to our higher baud rates.

Disposition

Standard updated throughout to reference EIA-694 (electrical standard, similar to RS-232 but supporting higher data rates) with connectorization specifics per individual application.

ID#:	1-43 *(updated 5-28-2014)*	**Status:**	Closed
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical	**Survey?**:	NO
Page:	58		
Section:	C60P		

Issue

Are requiring EIA-232 compatible signals or EIA-562/574?

Proposed Solution

Suggest change "… an EIA-232 …" to "… a modified EIA-574 …" due to our higher baud rates.

Commenter's Notes

See 1-42 above. Also this should be category 2 or 3.

Disposition

Standard updated throughout to reference EIA-694 (electrical standard, similar to RS-232 but supporting higher data rates) with connectorization specifics per individual application.

ID#:	1-44	**Status:**	Closed
Commenter:	CID1	**Priority**:	---
Comment Type:	Technical		
Page:	59		
Section:	C12S		

Issue

The power output capability of Pin 12 needs to be stated.

Proposed Solution

State the amount of maximum current that pin 12 can provide.

Disposition

Add note for 50mA maximum draw.

ID#:	1-45	**Status:**	Closed
Commenter:	CID1	**Priority**:	---
Comment Type:	Technical		
Page:	60		
Section:	C13S		

Issue

The power output capability of Pin 12 needs to be stated.

Proposed Solution

State the amount of maximum current that pin 12 can provide.

Disposition

Add note for 50mA maximum draw.

ID#:	1-46 *(updated 5-28-2014)*	**Status:**	Closed
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical	**Survey?**:	NO
Page:	60		
Section:	C21S/C22S		

Issue

Are requiring EIA-232 compatible signals or EIA-562/574?

Proposed Solution

Suggest change "… an EIA-232 …" to "… a modified EIA-574 …" due to our higher baud rates.

Disposition

Standard updated throughout to reference EIA-694 (electrical standard, similar to RS-232 but supporting higher data rates) with connectorization specifics per individual application.

ID#:	1-47	**Status:**	Closed
Commenter:	CID1	**Priority**:	---
Comment Type:	Technical		
Page:	61		
Section:	C2S/C20S		

Issue

The power output capability of Pin D needs to be stated.

Proposed Solution

State the amount of maximum current that pin D can provide (100 mA?).

Disposition

Add note for 100mA maximum draw.

ID#:	1-48	**Status:**	Closed
Commenter:	CID1	**Priority**:	---
Comment Type:	Editorial		
Page:	62		
Section:	5.3.1.1; 5.3.1.2		

Issue

Both sections incorrectly reference the old signal names for the Ethernet signals.

Proposed Solution

Change “NETWK1-NETWK4” to reflect the new signal names.

Disposition

Change as proposed.

ID#:	1-49	**Status:**	Closed
Commenter:	CID1	**Priority**:	---
Comment Type:	Technical		
Page:	63		
Section:	5.3.1.4		

Issue

EIA-562 and EIA-232 are missing from the isolation requirements.

Proposed Solution

Add them to the text with the EIA-574 and EIA-485 requirements.

Disposition

Added isolation for EIA-694 signals to third paragraph.
Modified text to also allow magnetic isolation.

ID#:	1-50 *(updated 5-28-2014)*	**Status:**	Closed
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical	**Survey?**:	NO
Page:	68		
Section:	5.3.2.5		

Issue

Single mode fiber should rather (also?) support Ethernet (IP connections) and not just EIA-485 serial based communications. This should be standardized communications and not manufacturer proprietary.

Interchangeability and interoperability are unattainable based solely on this document.

Proposed Solution

1. Add support for 100BaseFX or other standard fiber interfaces.
2. Allow other wavelengths and connectors.
3. Consider supporting SFP products (or define an interface module that supports them).

Disposition

Proposed solution rejected by WG leadership as out of scope.

ID#:	1-51 *(updated 5-28-2014)*	**Status:**	Closed
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical	**Survey?**:	NO
Page:	68		
Section:	5.3.2.6		

Issue

Multi-mode fiber should rather (also?) support Ethernet (IP connections) and not just EIA-485 serial based communications. This should be standardized communications and not manufacturer proprietary.

Interchangeability and interoperability are unattainable based solely on this document.

Proposed Solution

1. Add support for 100BaseFX or other standard fiber interfaces.
2. Allow other wavelengths and connectors.
3. Consider supporting SFP products (or define an interface module that supports them).

Disposition

Proposed solution rejected by WG leadership as out of scope.

ID#:	1-52	**Status:**	Closed
Commenter:	CID1	**Priority**:	---
Comment Type:	Editorial		
Page:	70		
Section:	5.3.2.9		

Issue

The wrong signals names are used for the Ethernet signals on the backplane.

Proposed Solution

Change NETWK1-NETWK4 to the new Ethernet signal names.

Disposition

Change as proposed.

ID#:	1-53	**Status:**	Closed
Commenter:	CID1	**Priority**:	---
Comment Type:	Editorial		
Page:	70		
Section:	5.4		

Issue

First list references the wrong sections.

Proposed Solution

Correct cross-referencing.

Disposition

Change as proposed.

ID#:	1-54	**Status:**	Closed
Commenter:	CID1	**Priority**:	---
Comment Type:	Editorial		
Page:	70		
Section:	5.4		

Issue

The paragraph “Each version may be implemented …” and its list adds no value and should be removed. (It specifies design options and others may be available in the future).

Proposed Solution

Remove the referenced text and list.

Disposition

Change as proposed.

ID#:	1-55 *(updated 5-28-2014)*	**Status:**	Closed
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical	**Survey?**:	NO
Page:	89 (and elsewhere)		
Section:	6.2.5.2		

Issue

In order to support international sales and future designs, references to "60 Hz AC service power" should be reworded to referenced "service power" and the frequency of linesync should be the nominal frequency or 50 Hz (in the case of DC service power).

Proposed Solution

Make changes throughout the document to support both 60/50 Hz operation or DC-powered operation.

For example, change the end of the 1st sentence of 4.4.2 to "…provides a 50% duty cycle square-wave at the nominal line frequency (e.g. 50 or 60Hz)."

Disposition

Replace the first two sentences of section 6.2.5.2 LINESYNC with the following:

> 6.2.5.2 LINESYNC
> The LINESYNC signal shall be generated by a crystal oscillator, which shall synchronize to the AC service power line at 120 and 300˚. LINESYNC shall be a continuous square-wave signal with +5 VDC amplitude, nominal AC line frequency (50 or 60 Hz), and 50 ± 1% duty cycle during loss of AC service power.

ID#:	1-56	**Status:**	Closed
Commenter:	CID1	**Priority**:	---
Comment Type:	Technical		
Page:	91		
Section:	6.2.6.x (new section)		

Issue

Power Supply efficiency and possibly power factor correction should be specified.

Proposed Solution

Suggest that the power supply meet the “80 Plus Silver” standard for PC supplies at a minimum. Further suggest that active PFC be required.

Disposition

Proposed solution is rejected. No specification for efficiency or power factor to be included.

ID#:	1-57	**Status:**	Closed
Commenter:	CID1	**Priority**:	---
Comment Type:	Technical		
Page:	130		
Section:	9.1.15		

Issue

All PCBs need to be conformal coated.

Proposed Solution

Add requirement into standard.

“All Printed Circuit Boards (PCBs) shall be conformal coated per the coating manufacturer’s recommendations. A method shall be available to independently verify the conformal coating (e.g. UV light tracer, etc).”

Disposition

Change as proposed.

Recommended text added to Section 9.1.15 PCB Design.

ID#:	1-58	**Status:**	Closed
Commenter:	CID1	**Priority**:	---
Comment Type:	Technical		
Page:	93		
Section:	6.3.1.4		

Issue

The location of the AUX switch is not identified.

Proposed Solution

Add AUX switch to the list of “front of assembly” components.

Disposition

Change as proposed.

ID#:	1-59	**Status:**	Closed
Commenter:	CID1	**Priority**:	---
Comment Type:	Technical		
Page:	93		
Section:	6.3.1.4		

Issue

The standard unnecessarily restricts where components/connectors can be located.

Proposed Solution

Relax the location requirements where possible. For example, communication slots and/or connectors could be on the side of the ATC unit.

Disposition

Include the following table for all component-related requirement and placement details.

Minimum Components	Rack	Shelf
ACTIVE LED for CPU	Front	Front
Ethernet Port 2 “100” LED (illuminated linked at 100 Mbps, extinguished at all other times) “ACTIVE” LED (displays Tx and Rx activity) RJ-45 connector (Network Connection)	Front or Back	Front, Back or Side
Ethernet Port 3 “100” LED (illuminated linked at 100 Mbps, extinguished at all other times) “ACTIVE” LED (displays Tx and Rx activity) RJ-45 connector (Network Diagnostics)	Front or Back	Front, Back or Side
Ethernet Port 6 “100” LED (illuminated linked at 100 Mbps, extinguished at all other times) “ACTIVE” LED (displays Tx and Rx activity) RJ-45 connector (Controller Diagnostics)	Front or Back	Front, Back or Side
Ethernet Port 7 “100” LED (illuminated linked at 100 Mbps, extinguished at all other times) “ACTIVE” LED (displays Tx and Rx activity) RJ-45 connector (Controller Expansion)	Front or Back	Front, Back or Side
Power Supply Overcurrent Device	Front or Back	Front, Back or Side
Serial User Interface to Console (C50S or C50J)	Front	Front
Front Panel User Interface (C60P or Keyboard, LCD, Bell)	Front	Front
USB Port A	Front or Back	Front
Optional Components	**Rack**	**Shelf**
Aux Switch (only supplied with Keyboard, LCD, Bell)	Front	Front
Serial I/O C13S	Front or Back	Front, Back or Side
Communications Slot 1 with Ethernet Port 4	Front or Back	Front, Back or Side
Communications Slot 2 with Ethernet Port 8	Front or Back	Front, Back or Side
Data Key	Front or Back	Front, Back or Side
Parallel I/O C11S	Back	Front, Back or Side
Parallel I/O C12S	Back	Front, Back or Side
Parallel I/O C1S	Back	Front, Back or Side
Parallel I/O MSA, MSB, MSC and MSD connectors	Front	Front
Power Indicator LED for each DC Power Source	Front or Back	Front, Back or Side
Power Switch	Front or Back	Front, Back or Side
Serial I/O NEMA Port 1	Front or Back	Front
NEMA TS 2 Type 1 MSA Power Connector	Front or Back	Front

ID#: 1-60 *(updated 5-28-2014)* **Status:** Closed

Commenter: CID1 **Priority**: 1

Comment Type: Technical **Survey?**: NO

Page: 95

Section: 7.1.1; 7.2; 7.2.1.7

Issue

No where does the standard explicitly state how parallel I/O is created … in fact, this section leads one to speculate that the I/O device connects via Ethernet to the engine Board. The API requires that SP5 be used … we either to explicitly state this or state otherwise (manufacturer's choice).

Further, 7.2.1.2 mentions "NRESET" but where does this signal come from … not the Engine Board … it is not until the end of section 7.2.1.3 that it is defined.

Proposed Solution

We need to rethink the flexibility around how I/O is generated. The Host EEPROM provides some information but is it sufficient and can the API use it to determine how to configure/use I/O?

Disposition

Proposed solution rejected by WG leadership as out of scope.

ID#:	1-61 *(updated 5-28-2014)*	**Status:**	Closed
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical	**Survey?**:	NO
Page:	102 (and others)		
Section:	7.2.1.7.4; 7.2.1.7.7		

Issue

During previous discussions it was mentioned that more inputs were desired however certain commands (such as #52) place inherent restrictions on the number of inputs to a maximum of 128 (input #0 - #127) due to the msb being used in some commands as flags even though the same command allows the "number of items" to range from 0-255. Need to increase the number of inputs to 255 (or 256)

Similarly, ensure that the ATC supports 255 outputs.

Proposed Solution

Modify various commands/responses or add supplemental commands/responses to increase the number of inputs and outputs to 255 (minimum) each.

Disposition

Proposed solution rejected by WG leadership as out of scope.

ID#:	1-62	**Status:**	Closed
Commenter:	CID1	**Priority**:	---
Comment Type:	Editorial		
Page:	116		
Section:	7.3		

Issue

Port 4 should be the signals on Communications Interface Slot A2.

Proposed Solution

Correct text as specified.

Disposition

Both slots are now optional per Comment 3-1.
Slot 2 (Port 8) should be labeled ‘A1’. Slot 2 (Port 4) should be labeled ‘A2’.
Revisit other Ethernet references to insure consistency.

ID#:	1-63	**Status:**	Closed
Commenter:	CID1	**Priority**:	---
Comment Type:	Editorial		
Page:	116		
Section:	7.3		

Issue

Port 8 should be the signals on Communications Interface Slot A1.

Proposed Solution

Correct text as specified.

Disposition

Both slots are now optional per Comment 3-1.
Slot 2 (Port 8) should be labeled ‘A1’. Slot 2 (Port 4) should be labeled ‘A2’.
Revisit other Ethernet references to insure consistency.

ID#:	1-64	**Status:**	Closed
Commenter:	CID1	**Priority**:	2
Comment Type:	Technical		
Page:	119+		
Section:	8		

Issue

Tests need to adopt current test procedures and standards where they are similar to our desires. For example, there are numerous shock and vibration standards available and no one tests shock with the procedure specified in this document.

Proposed Solution

Survey available applicable standards and update to reflect relevant test procedures.

For example, TEES 2009 requires the following:

Shock - Test per Specification MIL-STD-810G Method 516.6.
Vibration - per Specification MIL-STD-810G Method 514.6.

Disposition

Modify the standard to provide the following vibration and shock testing changes.

1. Vibration of 5 to 30 Hz as defined by section 2.2.8 of NEMA TS2 2003
2. 10g Shock test as defined by section 2.2.9 of NEMA TS2 2003, with the following updates to the test:
    a.) Program the table to subject the test unit to a 10G force having a duration of 11mS.
    b.) The test shall use a waveform suitable to simulate a drop test, such as saw tooth. The waveform shall be a saw tooth with 11mS rise time and 0mS fall time.
    c.) Subject the test unit to the above test setup three times in both the positive and negative direction.

All other testing to remain as-is.

ID#:	1-65	**Status:**	Closed
Commenter:	CID1	**Priority**:	2
Comment Type:	Technical		
Page:	123-124		
Section:	8.7.3-8.7.6		

Issue

I believe that we should NOT be skipping test 2.2.2.11 Timing Accuracy Tests and 2.2.2.11.2 Repeatability.

Proposed Solution

Remove the exclusion of these tests from the sections identified.

Disposition

Add the following language to the standard:

A Timing Accuracy and Repeatability Test (TART) application program shall be installed and operate continuously and concurrently with the Engine Board Communications Loading Test program. The TART program shall be provided by the manufacturer and provide the following functionality:

1. Using Linux Timers, the TART program shall cause the CPU_ACTIVE signal to continuously toggle "on" (low voltage) and toggle "off" (high voltage) to rest during a one minute period as follows:
2. CPU_ACTIVE output shall toggle “on” at the 55.0 s mark and toggle “off” at the 0.0 s mark
3. A logging mechanism shall be available to timestamp each transition for future review.
4. The timestamps shall be reviewed upon test completion to ensure that the Timing Accuracy Tests and Repeatability tests of NEMA TS2 - 2008 (Section 2.2.2) are satisfied.

Changing the operating system time during the test should not impact the interval times of the test. LINESYNC shall be used as the timing reference, nominally at 60Hz. The ATC manufacturer shall provide access to the CPU_ACTIVE signal for test monitoring purposes.

Added as new Section 8.1.2.

ID#:	1-66	**Status:**	Closed
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical		
Page:	129		
Section:	9.1.11.4		

Issue

Technical specs appear to be in error … contacts rated at a minimum of 5A yet switch is rated for 10A minimum. Also, gold over brass is probably not the correct contact material for power switches. How many operations should a power switch be rated for?

Proposed Solution

Fix the specs for power switches (suggest using TEES 2009 1.3.11.4).

Disposition

Review and modify switch requirements (silver over nickel, 10A inductive).

ID#:	1-67 (*updated 5-28-2014*)	**Status:**	Closed (S2)
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical		
Page:	23		
Section:	Figure 2-6; 2.3.1.1		

Issue

Re: "This feature allows the local operator or a remote computer to install or update the application software resident on the ATC."

For safety reasons, I suggest that only a local operator is allowed to install or update the application software resident on the ATC.

Solution A states that remote computers are not permitted to perform the action while Solution B allows them only if the agency specifically permits it and has appropriate SOPs and safety precautions in place, hence assuming liability for any operational issues.

Proposed Solution

(Previously deferred. Two solutions are proposed for consideration. Vote for A, B, or none)

A) For safety reasons, I suggest the following replacement text:

> "This feature allows the local operator to install or update the application software resident on the ATC."

or

B) For safety reasons, I suggest the following replacement text:

> "This feature allows the local operator to install or update the application software resident on the ATC. With Standard Operating Policies and appropriate safety precautions in place, a User may permit a remote computer to install or update the application software resident on the ATC also."

Note: Figure 2-6 may need to be updated to reflect any changes.

Disposition

(Proposed Solution B accepted by Survey 2)

ID#:	1-68 (*updated 5-28-2014*)	**Status:**	Closed (S2)
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical		
Page:	23		
Section:	Figure 2-6; 2.3.1.2		

Issue

Re: "This feature allows the local operator to install or update the O/S resident on the ATC. Local upgrade capability is required while remote upgrade capability is considered an optional feature.""

For safety reasons, I suggest that only a local operator is allowed to install or update the O/S resident on the ATC.

Solution A states that remote computers are not permitted to perform the action while Solution B allows them only if the agency specifically permits it and has appropriate SOPs and safety precautions in place, hence assuming liability for any operational issues.

Proposed Solution

(Previously deferred. Two solutions are proposed for consideration. Vote for A, B, or none)

A) For safety reasons, I suggest the following replacement text:

> "This feature allows the local operator to install or update the O/S resident on the ATC."

or

B) For safety reasons, I suggest the following replacement text:

> "This feature allows the local operator to install or update the O/S resident on the ATC. With Standard Operating Policies and appropriate safety precautions in place, a User may allow remote upgrade capability as an optional feature also."

Note: Figure 2-6 may need to be updated to reflect any changes.

Disposition

(Proposed Solution B accepted by Survey 2)

ID#:	1-69 (*updated 5-28-2014*)	**Status:**	Closed
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical		
Page:	24		
Section:	Figure 2-6; 2.3.1.7		

Issue

Re: "This feature allows the operator to manage the starting, stopping and scheduling of one or more applications on the ATC."

For safety reasons, I suggest that only a local operator is allowed to manage the starting, stopping and scheduling of applications on the ATC.

Solution A states that remote computers are not permitted to perform the action while Solution B allows them only if the agency specifically permits it and has appropriate SOPs and safety precautions in place, hence assuming liability for any operational issues.

Proposed Solution

(Previously deferred. Two solutions are proposed for consideration. Vote for A, B, or none)

A) For safety reasons, I suggest the following replacement text:

> "This feature allows a local operator to manage the starting, stopping and scheduling of one or more applications on the ATC."

or

B) For safety reasons, I suggest the following replacement text:

> "This feature allows a local operator to manage the starting, stopping and scheduling of one or more applications on the ATC. If the User develops and implements appropriate Standard Operating Policies and safety precautions, the User may allow remote capabilities as an optional feature also."

Note: Figure 2-6 may need to be updated to reflect any changes.

Disposition

Comment retracted by commenter.

ID#:	1-70	**Status:**	Closed
Commenter:	CID1	**Priority**:	---
Comment Type:	Technical		
Page:	76		
Section:	6.1.4.1		

Issue

"Displayable characters shall be refreshed at least 20 times per second." is excessive especially when the display contents does not change.

Proposed Solution

Reduce the LCD refresh rate to 10 Hz, and preferably just for pixels/characters that changed. There is no User need that can demand refresh rate. This still allows for the specified flash (on/off times), but enables one to support larger displays.

Disposition

Text in v6.10 is acceptable (comment was from previous version). Comment retracted by commenter.

ID#:	1-71	**Status:**	Closed
Commenter:	CID1	**Priority**:	2
Comment Type:	Technical		
Page:	General		
Section:	Interval Timing		

Issue

During NTCIP 1214 standards development, it was raised that some controllers are not accurately timing intervals. ATC v5.2b standard puts some requirements on clocks and timing (4.1.3) but does not go far enough.

Proposed Solution

1. In section 4.1.3, suggest a stronger wording that under no circumstances shall the OST miss a LINESYNC pulse/edge, and that applications shall ensure that all timing is relative to OST such that no cumulative or drift errors shall occur in timing intervals.
2. Somewhere we need to add a requirement that any interval timed shall not deviate by more than 100 milliseconds from its set value at a power source frequency of 60 hertz.
3. In section 9.1.1, there should be a test that communications loading does not affect timing accuracy per defined specifications (e.g. toggle a signal every 8.333 ms, etc)
4. In section 9.7.2 to 9.7.6 inclusively, remove the statement "skip tests 2. 2.2.11 Timing Accuracy Tests and 2. 2.2.11.2 Repeatability" ...we need to ensure that timing accuracy and repeatability is maintained.
5. Add requirements specifically to define timing accuracy and repeatability.
6. Add a requirement in section 9.6 for a Chart recorder sufficient to verify/validate timing intervals, etc.(e.g. 24 channel, 1ms resolution, etc)
7. In section 4.1.3, besides mandating that the OS update the RTC from the OST once per hour, should we also add a requirement that the RTC be updated if it differs from the OST by more than x ms? E.g. one cannot achieve the NYC requirements as currently stated as there can be too much drive between OST and RTC such that if a power outage occurs and OST is reloaded from RTC that offset in the time is introduced.

Disposition

1. The wording of section (now) 3.1.3 has been significantly revised to state the expected clock accuracy to prevent cumulative drift error.

2. The statement proposed is too vague, but it follows that timing of intervals in application or driver space derives from the accuracy of the clock source selected, and in the case of linesync will be as stated in 3.1.3.

3. The test in section 8.10.4 addresses this.

4. The test in section 8.10.4 addresses this.

5. Section 3.1.3 addresses this.

6. Addressed by Comment 1-65.

7. Section 3.1.3 addresses this.

ID#:	1-72 *(updated 5-28-2014)*	**Status:**	Closed
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	132		
Section:	10.1.4 (new)		

Issue

A lot of agencies use inventory software to track components, controllers, etc and it would be beneficial if an industry standard serial numbering system was used. At the least, a minimum amount of standardized information should be provided. (Note that manufacturers could also include a secondary serial number based on their own requirements).

Proposed Solution

Add new section - proposed text (if not prescribing the exact format of the serial number):

10.1.4 Serial Numbers

1) Each ATC and all subassemblies shall have a unique serial number, which is permanently affixed to the item. The manufacturer shall provide the user with a list of all serial numbers in each shipment.
2) It is preferable that each serial number shall include an obvious date of manufacture, the vendor's ID (e.g. NTCIP assigned manufacturer code), the subassembly or assembly ID, and number for each specific item. The manufacturer shall work with the agency to determine an acceptable numbering scheme and starting numbers for serial numbers.

Disposition

Add language: "Each ATC and all subassemblies shall have a unique serial number".

Text added as new Section 10.1.4.

ID#:	1-73	**Status:**	Closed (S1)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical		
Page:	132		
Section:	10.1.5 (new)		

Issue

Packaging of the ATC should be addressed.

Proposed Solution

Add new section:

10.1.5 Packaging

Each item delivered shall be individually packed in its own shipping container. Environmentally friendly packaging shall be used where possible with an emphasis on packaging made from post consumer waste and recyclable materials. Packaging for complete ATC units shall be designed for ease of reuse. When loose styrofoam is used for packing the item, the item shall be sealed in a plastic bag to prevent direct contact with the styrofoam.

The ATC shall be constructed and packaged such that it can be shipped individually via common carrier (e.g. USPS, UPS, FedEx) without damage, disassembly, or removal of internal components or subassemblies.

Disposition

(Rejected by Survey 1)

ID#:	1-74	**Status:**	Closed (S1)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical		
Page:	132		
Section:	10.1.6 (new)		

Issue

Delivery of individual ATC units should be complete and ready for testing.

Proposed Solution

Add new section:

10.1.6 Delivery

Each item delivered for testing shall be complete, including manuals, and ready for testing. Documentation shall reflect as-built components.

Disposition

(Accepted by Survey 1)

Added as Section 10.1.5.

ID#:	1-75	**Status:**	Closed (S1)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical		
Page:	131		
Section:	9.1.17 (new)		

Issue

Use of fans, etc for cooling purposes should not be permitted.

Proposed Solution

Add new section

10.1.6 Use of Fans

The ATC shall not use any fans or similar active mechanical devices to manage the airflow.

Disposition

(Accepted by Survey 1)

Added as Section 9.1.22.

ID#:	1-76	**Status:**	Closed
Commenter:	CID1	**Priority**:	2
Comment Type:	Technical		
Page:	125		
Section:	8.10.3		

Issue

I am concerned about interpretations of "function normally and continue normal sequencing (operation) at the conclusion of the test). For example, is rebooting at the conclusion "normal" … I do not believe so.

Proposed Solution

Replace the 1st paragraph text with the following:

8.10.3 Rapid Power interruption

The CU under test shall function properly during and after rapid power interruption testing of the form that the power shall be off for 350 ms and on for 650 ms for a period of two minutes. Power interruption shall be performed through electromechanical contacts of an appropriate size for the load. Prior to this test, the CU shall have completed its initialization and shall be running its communication test software. Although certain functionality may appear to flash at this rate (e.g. LCD backlight), the CU shall continue to be unaffected by this interruption of power including any connected USB memory device. Note that functioning properly is defined as continuing to run the communication test without any errors occurring, no corruption of memory, no time-of-day or clock corruption, and no excessive drift to the time-of-day clock as described in Section3.1.3 and other tests of this standard. This test shall be performed at both -37˚ C and +74˚ C, at a nominal 120 VAC line voltage. Repeat this test three times.

Disposition

Add "Verification of memory may be performed at the conclusion of the overall test." to the end of the section.

ID#:	1-77	**Status:**	Closed (S1)
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical		
Page:	131		
Section:	9.1.18 (new) or enhance 9.1.12 (and subsections)		

Issue

We should include requirements for wiring and cabling within and attached to the ATC.

Proposed Solution

Add new section:

9.1.18 Wiring and Cables

All wiring and cables provided in and/or with the ATC shall be stranded and shall remain “very flexible” at temperatures down to –20°F. This shall apply to the power cables, serial connect cables, and Ethernet cables.

Disposition

(Rejected by Survey 1)

ID#:	1-78a (*updated 5-28-2014*)	**Status:**	Closed (S2)
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical		
Page:	127		
Section:	9.1.5		

Issue

Components sources, components availability, and component life cycles are of concern to users … safe guards to help protect the users interests should be included.

Proposed Solution

Original section 9.1.5.1 is:

9.1.5.1 Circuit Designs

The electronic circuit design shall be such that all components of the same generic type, regardless of manufacturer, shall function equally in accordance with this standard. No component shall be applied contrary to its manufacturer's recommendations or data sheets.

Replace with new section 9.1.5.1:

9.1.5.1 Circuit Designs

The electronic circuit design shall be such that all components of the same generic type, regardless of manufacturer, shall function equally in accordance with this standard. All components shall be new and of the latest design and manufacture at the time of delivery. No component or part shall be substituted, applied, or used contrary to the manufacturer's recommendations and published data sheets including both shelf-life and temperature rating requirements.

Disposition

(Rejected by Survey 2)

ID#:	1-78b (*updated 5-28-2014*)	**Status:**	Closed (S2)
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical		
Page:	127		
Section:	9.1.5		

Issue

Components sources, components availability, and component life cycles are of concern to users … safe guards to help protect the users interests should be included.

The goal of this comment is to ensure that only components originally rated over the full temperature range are used.

Proposed Solution

Original section 9.1.5.2 is:

9.1.5.2 Operational Envelopes

No component shall be operated above 80 percent of its maximum rated voltage, current or power ratings. Digital components shall not be operated above 3 percent over their nominal voltage, current, or power ratings.

Replace with new section 9.1.5.2:

9.1.5.2 Operational Envelopes

No component shall be operated above 80 percent of its maximum rated voltage, current or power ratings. Digital components shall not be operated above 3 percent over their nominal voltage, current, or power ratings. All components used shall be designed to operate within the full temperature range specified. The component data sheets shall be the only accepted form of validation of the temperature range. Testing and/or screening of commercial grade components is not permitted.

Disposition

(Accepted by Survey 2)

ID#:	1-78c (*updated 5-28-2014*)	**Status:**	Closed (S2)
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical		
Page:	127		
Section:	9.1.5		

Issue

Components sources, components availability, and component life cycles are of concern to users … safe guards to help protect the users interests should be included.

The purpose of this sub-comment is to protect Users from buying equipment that contains obsolete or "not recommended for new designs" components in order to attempt to assist with ensuring a longer period of product support / maintenance. Use of such components must be brought to the attention of the Users.

Proposed Solution

Add a new subsection within section 9.1.5:

9.1.5.x Component Life Cycle Status

Obsolete components, components that are no longer supported by the manufacturer, components not recommended for new designs, components which have been discontinued, or the manufacturer has announced plans to discontinue at the time of ATC unit manufacture shall not be used in the design of any subassemblies without the express written consent of the User and must be identified to the User.

Disposition

(Rejected by Survey 2)

ID#:	1-78d (*updated 5-28-2014*)	**Status:**	Closed (S2)
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical		
Page:	127		
Section:	9.1.5		

Issue

Components sources, components availability, and component life cycles are of concern to users … safe guards to help protect the users interests should be included.

The purpose of this sub-comment is to protect Users from counterfeit components (agencies have been affected by this previously) by ensuring that components are only procured through manufacturer authorized sources, and to provide a remediation process.

Proposed Solution

Add a new subsection within section 9.1.5:

9.1.5.x Component Sourcing and Warranty

The ATC manufacturer shall ensure that all electrical and electronic components used for the construction of the ATC are acquired through component manufacturer authorized distribution channels for each specific component. All electronic and electrical components used for the construction of the ATC shall be warranted by the original manufacturer against defects. If the use of counterfeit parts is discovered at any time, then the manufacturer shall promptly replace the suspected or compromised components at no cost to the user and restart the original product warranty.

Disposition

(Rejected by Survey 2)

ID#:	1-79	**Status:**	Closed (S1)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical		
Page:	132		
Section:	10.1		

Issue

Manufacturers should have quality control procedures in place to qualify suppliers, etc.

Proposed Solution

Suggest adding the following text as a new paragraph under section 10.1:

The ATC manufacturer is required to develop and maintain a quality assurance (QA) program for all purchased components. The QA procedures must show how vendors are qualified and how the components are inspected and tested prior to use in the ATC. The QA procedure must describe how vendors performance is tracked and how the approved vendor lists are updated.

Disposition

(Rejected by Survey 1)

ID#:	1-80	**Status:**	Closed (S1)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical		
Page:	131		
Section:	9.1.19 (new)		

Issue

ATC units, modules, and subassemblies regularly use programmed devices such as FPGAs, microcontrollers, etc which preclude the ability of an end user to directly purchase replacements for repair and maintenance issues … this should be resolved.

Proposed Solution

Add a new section:

9.1.19 Programmed Devices and Components

All necessary programming information shall be provided to allow end users to purchase any custom programmed device (e.g. Field Programmable Gate Array [FPGA]). Such information shall be provided in written and/or electronic form suitable for procurement from the component vendor or an authorized distributor.

The manufacturer shall provide detailed programming information for any field programmable device is used within the ATC, including but not limited, field programmable gate arrays, EPROM's, Flash memory devices, microprocessors with embedded memory, etc., to allow user to directly purchase replacement components suitably programmed through common electronic distribution channels, or to in-circuit reprogram replacement components as required.

Note that all FPGA, microcontrollers (with embedded programming), EPROM, EEPROM, and similar memory storage devices shall be socket mounted unless the device can be re-programmed in circuit without removal. If the device is in-circuit re-programmable, then the documentation shall include detailed descriptions of all necessary cables, fixtures, software, and programming devices to allow the User to re-program the device for future alterations to the hardware or for component replacement.

Disposition

(Rejected by Survey 1)

ID#:	1-81A *(updated 1-20-2014)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	General		
Section:	(new)		

Issue

ATC units should have some basic level of runtime diagnostics such as those specified in NEMA TS 2.

Suggest that these diagnostics should behave in a standardized manner and that errors shall be reported to the User on the screen, for example).

Some of this may be applicable to the API standard, but the ATC should at least offer some basic minimal diagnostics and reported methodology.

Proposed Solution

Add new requirements in either chapter 8 (testing) or the Appendices to address the following:

The ATC shall include diagnostic firmware that runs continuously **during normal operation** to determine if the device is functioning properly. Examples of diagnostics tests include checking memory contents via use of checksums or similar techniques.

Disposition

(Rejected by Survey 3)

ID#:	1-81B *(updated 1-20-2014)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	General		
Section:	(new)		

Issue

ATC units should have some basic level of runtime diagnostics such as those specified in NEMA TS 2.

Suggest that these diagnostics should behave in a standardized manner and that errors shall be reported to the User on the screen, for example).

Some of this may be applicable to the API standard, but the ATC should at least offer some basic minimal diagnostics and reported methodology.

Proposed Solution

Add new requirements in either chapter 8 (testing) or the Appendices to address the following:

If the diagnostic software determines that the device is no longer operating properly, it shall terminate operation in a manner that is safe, terminate the watchdog output, and prevent application programs from restarting.

Disposition

(Rejected by Survey 3)

ID#:	1-81C *(updated 1-20-2014)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	General		
Section:	(new)		

Issue

ATC units should have some basic level of runtime diagnostics such as those specified in NEMA TS 2.

Suggest that these diagnostics should behave in a standardized manner and that errors shall be reported to the User on the screen, for example).

Some of this may be applicable to the API standard, but the ATC should at least offer some basic minimal diagnostics and reported methodology.

Proposed Solution

Add new requirements in either chapter 8 (testing) or the Appendices to address the following:

If the ATC diagnostic firmware determines that the device is no longer operating properly and the ATC is using the API, then the ATC shall interact with the Health Monitor and/or Watchdog Monitor services as needed to execute an orderly shutdown.

Disposition

(Rejected by Survey 3)

ID#:	1-81D *(updated 1-20-2014)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	General		
Section:	(new)		

Issue

ATC units should have some basic level of runtime diagnostics such as those specified in NEMA TS 2.

Suggest that these diagnostics should behave in a standardized manner and that errors shall be reported to the User on the screen, for example).

Some of this may be applicable to the API standard, but the ATC should at least offer some basic minimal diagnostics and reported methodology.

Proposed Solution

Add new requirements in either chapter 8 (testing) or the Appendices to address the following:

Once the diagnostic firmware determines that the device is no longer operating properly, ATC units shall identify the error on the display (via a configuration screen?) after operation has terminated.

Disposition

(Rejected by Survey 3)

ID#:	1-82	**Status:**	Closed (S1)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical		
Page:	129		
Section:	9.1.13		

Issue

Incandescent indicators shall be prohibited.

Proposed Solution

Add a 2nd paragraph to the section:

Incandescent indicators shall not be used within the ATC unit.

Disposition

(Accepted by Survey 1)

ID#:	1-83	**Status:**	Closed (S1)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical		
Page:	131		
Section:	9.1.x (new)		

Issue

There are no requirements of sockets in the standard (TEES has requirements).

Proposed Solution

Add a new section:

9.1.x Socket Mounted

NO device shall be Socket Mounted unless specifically called out or requested and approved by the User. Sockets shall have a minimum gold thickness of 0.000015 inches on contact surfaces and be of “machined contact” design.

Disposition

(Rejected by Survey 1)

ID#:	1-84 *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical	**Survey?**:	NO
Page:	124		
Section:	8.7.x (new)		

Issue

There is no “low amplitude transient” test included like what is normally performed on controllers (300V spikes).

Proposed Solution

Add a new test using the following basic concepts:

With ATC under test housed in the cabinet with the cabinet’s surge protectors removed, a transient voltage of +\- 300 volts shall be synchronously applied to the AC line of the cabinet at its Main breaker. The transient voltage shall be moved uniformly over the full AC waveform once every second. The transient voltage may also be applied constantly at any point on the AC waveform. The transient voltage shall have a peak noise power of 5 kilowatts with a pulse rise time of 500 ns. The applied line voltage for this test shall be 120 +\- 12 VAC. The equipment that is being tested to be in compliance will function normally during and after the test. [Note: during acceptance and design approval testing, the ENGINEER shall determine the voltages under which this test is performed.]

Disposition

(Rejected by Survey 3)

ID#:	1-85 *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	131		
Section:	9.1.x (new)		

Issue

There is no specifications for potentiometers in the standard.

Proposed Solution

Suggest using the specifications stated in TEES2009 section 1.3.4 as a starting point.

From TEES 2009:

Potentiometers
Potentiometers with ratings from 1 to 2 watts shall meet Military Type RV4 requirements. Potentiometers with ratings less than 1 Watt shall be used only for trimmer type function. The potentiometer power rating shall be at least 100% greater than the maximum power requirements of the circuit.

Disposition

(Accepted by Survey 3)

ID#:	1-86 *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	131		
Section:	9.1.x (new)		

Issue

Although they may not exist in an ATC but could, there is no specifications for triacs in the standard.

Proposed Solution

Suggest using the specifications stated in TEES2009 section 1.3.8 as a starting point.

From TEES:

Triacs
Each triac with a designed circuit load of greater than 0.5 Amperes at 120 VAC shall be mounted to a heat sink with thermal conductive compound or material, in addition to being mechanically secured.

Disposition

(Rejected by Survey 3)

ID#:	1-87 *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	131		
Section:	9.1.x (new)		

Issue

There is no additional specifications for circuit breakers in the standard (we may want some since circuit breakers can now be used instead of fuses for items such as the AC input).

Proposed Solution

Suggest using the specifications stated in TEES2009 section 1.3.9 as a starting point.

From TEES (I removed the 80A breaker specific requirements):

Circuit Breakers
Circuit breakers shall be UL 489 approved. The trip and frame sizes shall be plainly marked (marked on the breaker by the manufacturer), and the Amperes rating shall be marked and visible from the front of the breaker. Contacts shall be silver alloy and enclosed in an arc-quenching chamber. Overload tripping shall not be influenced by an ambient air temperature range of from 0.4 0F to 122 0F. The minimum Interrupting capacity shall be 5,000 Amperes, RMS when the breaker is secondary to a UL approved fuse or primary circuit breaker and both breakers in concert provide the rated capacity. Circuit breakers shall be the trip-free type with medium trip delay characteristic (e.g. Carling switch Time Delay Curve #24 or equal).

Disposition

(Accepted by Survey 3)

ID#:	1-88 *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	131		
Section:	9.1.x (new)		

Issue

There is no specifications for terminal blocks in the standard.

Proposed Solution

Suggest using the specifications stated in TEES2009 section 1.3.12 as a starting point.

From TEES (with minor changes):

Terminal Blocks
The terminal blocks shall be barrier type, rated at 20 Amperes and 600 VAC RMS minimum. The terminal screws shall be 0.313 in minimum length nickel plated brass binder head type with screw inserts of the same material.

Disposition

(Rejected by Survey 3)

ID#:	1-89	**Status:**	Closed (S1)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical		
Page:	131		
Section:	9.1.x (new)		

Issue

We should include a requirement that batteries are not permitted within the ATC.

Proposed Solution

Add a new section

9.1.x Batteries

The ATC shall not utilize batteries.

Disposition

(Accepted by Survey 1)

ID#:	1-90	**Status:**	Closed (S1)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical		
Page:	131		
Section:	9.1.x (new)		

Issue

There is no specifications for jumpers in the standard.

Proposed Solution

Add a new section

9.1.x Jumpers

All jumpers and contacts pins shall be gold plated.

Disposition

(Accepted by Survey 1)

ID#:	1-91	**Status:**	Closed (S1)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical		
Page:	131		
Section:	9.1.9		

Issue

The specifications for transformers and inductors need to address special requirements of SMT parts.

Proposed Solution

Add “With the exception of Surface Mount Components, …” to the beginning of the 1st sentence.

Disposition

(Accepted by Survey 1)

ID#:	1-92 *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	131		
Section:	9.1.x (new)		

Issue

There is no specifications for PCB Header Post Connectors in the standard.

Proposed Solution

Suggest using the specifications stated in TEES2009 section 1.3.15.7 as a starting point. Also, we should require that they be 0.100 inch on center.

Modified from TEES:

1.3.15.7 PCB Header Post Connectors
Each PCB header post shall be 0.00155 in2 by 0.343 in high; shall be mounted on 0.156 in centers; and shall be tempered hard brass plated with 0.000015 in of gold over 0.00005 in of nickel.

Disposition

(Rejected by Survey 3)

ID#:	1-93 *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	131		
Section:	9.1.x (new)		

Issue

There is no specifications for Card Edge and Two-Piece PCB connectors in the standard.

Proposed Solution

Suggest using the specifications stated in TEES2009 section 1.3.15.4 as a starting point.

9.1.x Edge / PCB Connectors
Card Edge and Two-Piece PCB Connectors

9.1.x.1 PCB Edge Connectors
PCB Edge connectors shall have bifurcated gold-plated contacts. The PCB receptacle connector shall meet or exceed the following:

Operating Voltage: 600 VAC (RMS)
Current Rating: 5.0 Amperes
Insulation Material: Diallyl Phthalate or Thermoplastic
Insulation Resistance: 5,000 MΩ
Contact Material: Copper alloy plated with 0.00005 in of nickel and 0.000015 in of gold
Contact Resistance: 0.006 Ohm maximum

9.1.x.2 Two Piece PCB Connector
The Two-Piece PCB connector shall meet or exceed the DIN 41612.

Disposition

(Accepted by Survey 3)

Added as Section 9.1.22.

ID#:	1-94	**Status:**	Closed (S1)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical		
Page:	131		
Section:	9.1.x (new)		

Issue

There is no specifications for wire terminal connectors in the standard.

Proposed Solution

Add a new section:

9.1.x Wire Terminal connectors

Wire terminal connectors shall be solderless with PVC insulation. All terminal connectors shall be crimped using a controlled-cycle type crimping tool.

Disposition

(Rejected by Survey 1)

ID#:	1-95	**Status:**	Closed (S1)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical		
Page:	131		
Section:	9.1.x (new)		

Issue

There is no specifications for Adhesives in the standard.

Proposed Solution

Add a new section:

9.1.x Adhesives

All adhesives used shall have a minimum expected life of 20 years under adverse field conditions. ‘Stick-on’ retention devices shall not be used for any purpose unless specifically authorized by the end user.

Disposition

(Rejected by Survey 1)

ID#:	1-96A *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	131		
Section:	9.1.x (new)		

Issue

The mechanical requirements are weak in the areas of Assemblies, PCB connectors, and Workmanship.

Proposed Solution

Add a new subsection, based on TEES, to address assemblies. This is particular important with respect to the Communication Modules and slots (defines card guide requirements, etc).

From TEES section 1.4.1:

Assemblies
All assemblies shall be modular, easily replaceable and incorporate plug-in capability for their associated devices or PCBs. Assemblies shall be provided with two guides for each plug-in PCB or associated device (except relays). The guides shall extend to within 0.75 in from the face of either the socket or connector and front edge of the assembly. If Nylon guides are used, the guides shall be securely attached to the file or assembly chassis.

Disposition

(Accepted by Survey 3)

ID#:	1-96B *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	131		
Section:	9.1.x (new)		

Issue

The mechanical requirements are weak in the areas of Assemblies, PCB connectors, and Workmanship.

Proposed Solution

Add a new subsection, based on TEES, to address card guides in particular. This could be added to the subsection proposed by comment 1-96A.

From TEES section 1.4.1:

Nylon Card Guides
If Nylon guides are used, the guides shall be securely attached to the file or assembly chassis.

Disposition

(Accepted by Survey 3)

ID#:	1-96C *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	131		
Section:	9.1.x (new)		

Issue

The mechanical requirements are weak in the areas of Assemblies, PCB connectors, and Workmanship.

Proposed Solution

Add a new subsection, based on TEES, to address PCB Connectors that are mounted on a motherboard. Within a non 2070-based ATC, this typically would only impact Communication Module slots and they are the ones that would be subjected to the most amount of force anyways.

From TEES section 1.4.4:

PCB Connectors
All PCB Connectors mounted on a motherboard shall be mechanically secured to the chassis or frame of the unit or assembly.

Disposition

(Accepted by Survey 3)

ID#:	1-96D *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	131		
Section:	9.1.x (new)		

Issue

The mechanical requirements are weak in the areas of Assemblies, PCB connectors, and Workmanship.

Proposed Solution

Add a new sub-section based on TEES 2009 to cover “Workmanship”

From TEES 1.4.6:

9.1.x Workmanship
Workmanship shall conform to the requirements of this specification and be in accordance with the highest industry standards.

Disposition

(Rejected by Survey 3)

ID#:	1-97A *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	92		
Section:	6.3.1.1		

Issue

We might want to consider additional material requirements.

Proposed Solution

Consider including TEES section 1.2.7.1:

Aluminum
Aluminum sheets shall be Type 3003-H14 or Type 5052-H32 ASTM Designation B209 aluminum alloy. Rod, Bar and Extruded shall be Type 6061-T6, or equal.

Disposition

(Rejected by Survey 3)

ID#:	1-97B *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	92		
Section:	6.3.1.1		

Issue

We might want to consider additional material requirements.

Proposed Solution

Consider including TEES section 1.2.7.2:

Stainless Steel
Stainless Steel Sheets shall be annealed or one-quarter-hard complying with the ASTM Designation: A666 for Type 304, Grades A or B, stainless steel sheet.

Disposition

(Rejected by Survey 3)

ID#:	1-97C *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	92		
Section:	6.3.1.1		

Issue

We might want to consider additional material requirements.

Proposed Solution

Consider the following based on TEES section 1.2.7.3:

6.3.1.1.x Cold Rolled Steel
Cold Rolled Steel Sheets, Rods, Bars and Extruded shall be Type 1018/1020.

6.3.1.1.x.1 Plating
All cold roll steel shall be plated or painted. All plating shall be either cadmium plating meeting the requirements of Federal Specification QQ-P-416C, Type 2 Class I or zinc plating meeting the requirements of ASTM B633-85 Type II SC4.

Disposition

(Rejected by Survey 3)

ID#:	1-98	**Status:**	Closed (S1)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical		
Page:	127		
Section:	9.1.3		

Issue

Hardware should be 18-8 stainless steel.

Proposed Solution

Add “18-8” to the requirements.

Disposition

(Rejected by Survey 1)

ID#:	1-99	**Status:**	Closed (S1)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical		
Page:	131		
Section:	9.1.x (new)		

Issue

There is no requirements on the mounting of daughter boards in the standard.

Proposed Solution

Add a new section:

9.1.x Daughter boards

Daughter boards (including items such as keypads and LCD displays) shall be mechanically secured by sufficient means to either the ATC chassis or another PCB. Attachment methods shall be verified at the conclusion of the Design Acceptance Tests.

Disposition

(Rejected by Survey 1)

ID#:	1-100	**Status:**	Closed (S1)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical		
Page:	131		
Section:	9.1.x (new)		

Issue

PCB design requirements should include reference designator requirements.

Proposed Solution

Add a new section:

9.1.x Circuit Reference Designators

The circuit reference designator for each component part shall be clearly marked on the printed circuit card or mounting surface. The markings shall be clearly visible with all components installed.

Disposition

(Rejected by Survey 1)

ID#:	1-101 *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical	**Survey?**:	NO
Page:	122		
Section:	8.7		

Issue

In order to reduce testing costs of both manufacturers and users, I suggest that environmental tests be performed and certified by an independent 3rd party.

Proposed Solution

Add requirement for 3rd party certification of environmental tests specifically. Test results should state the particular version of unit evaluated including firmware (Linux, BSP, driver build), and version of each module such as Engine Board, Power Supply, Host Board, etc.

Disposition

(Rejected by Survey 3)

ID#:	1-102	**Status:**	Closed (S1)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical		
Page:	Various		
Section:	C13S		

Issue

Suggest that "C13S" be modified so that it is internally configurable (jumpers) to be either EIA/TIA-232E or EIA/TIA-485.

Proposed Solution

Modified "C13S" RS232 DB-25 Pin Out

Pin #	EIA-485 Function (mandatory)	EIA-232 Function (optional)
1	TXD+	Equipment Ground
2	RXD+	TXD
3	TXC+	RXD
4	RXC+	RTS
5	RTS+	CTS
6	CTS+	(no connection)
7	DCD+	Interface Ground
8	(no connection)	DCD
9	LINESYNC+ (optional)	(no connection)
10	NRESET+ (optional)	(no connection)
11	POWERDOWN+ (optional)	(no connection)
12	BIAS +5 VDC (optional)	(no connection)
13	Interface Ground Reference	(no connection)
14	TXD-	(no connection)
15	RXD-	(no connection)
16	TXC-	(no connection)
17	RXC-	(no connection)
18	RTS-	(no connection)
19	CTS-	(no connection)
20	DCD-	(no connection)
21	(no connection)	(no connection)
22	LINESYNC- (optional)	(no connection)
23	NRESET- (optional)	(no connection)
24	POWERDOWN- (optional)	(no connection)
25	Equipment Ground	(no connection)

Disposition

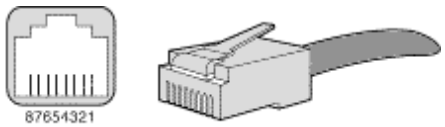
(Rejected by Survey 1)

ID#:	1-103	**Status:**	Closed (S1)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical		
Page:	62		
Section:	5.3.2.8 (new)		

Issue

Suggest adding support for EIA-561 (RJ-45 serial port standard).

Proposed Solution



RJ-45 connector

RJ-45 Connector Pin Out (EIA-561)

Pin #	Signal Name	Signal Description
1	DSR/RI	Data Set Ready / Ring Indicator (Optional)
2	DCD	Data Carrier Detect
3	DTR	Data Terminal Ready (Optional)
4	GND	Signal Ground / Common
5	RXD	Receive Data
6	TXD	Transmit Data
7	CTS	Clear To Send
8	RTS	Request To Send

Disposition

(Rejected by Survey 1)

ID#:	1-104 *(updated 5-28-2014)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	122		
Section:	8.6		

Issue

The test facilities should include modem load simulators, etc.

Proposed Solution

Enhance the list in 8.6 to include:

All testing shall be performed on the complete ATC unit including modem(s) and/or modem load simulator(s), and USB load simulator(s). Loopback connectors shall be used to simulate all ATC unit inputs, outputs, and communication interfaces.

Disposition

(Rejected by Survey 3)

ID#:	1-105A *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical	**Survey?**:	NO
Page:	General		
Section:	General		

Issue

I could not find any requirements on documentation including hardware, software, diagnostics, maintenance procedures, etc.

Proposed Solution

Include section(s) on documentation including but not limited to:

Operations Manual

An Operations Manual shall be supplied for the ATC unit. The Operations Manual shall include the following as a minimum :

1 Table of Contents
2 Glossary
3 General Description
4 General Characteristics
5 Installation instructions
6 Adjustments
7 Theory of Operation
7.a Systems Description (include block diagrams)
7.b Detailed Description of Circuit Operation

Disposition

(Rejected by Survey 3)

ID#:	1-105B *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical	**Survey?**:	NO
Page:	General		
Section:	General		

Issue

I could not find any requirements on documentation including hardware, software, diagnostics, maintenance procedures, etc.

Proposed Solution

Maintenance Manual

A Maintenance Manual shall be supplied for the ATC unit. The Maintenance Manual shall include the following as a minimum :

1 Table of Contents
2 Glossary
3 Maintenance
4.a Preventive Maintenance
4.b Trouble Analysis
4.c Trouble Shooting Sequence Chart
4.d Wave Forms
4.e Voltage Measurements
4.f Calibration Procedures
9 Parts List
6 Electrical Interconnection Details & Drawings
7 Schematic and Logic Diagram
8 Assembly drawings and a pictorial diagram showing physical locations and identification of each component
9 Simplified cabinet wiring diagram showing all signals and all intermediate connections.

Note that Parts listings shall include the component manufacturer's part numbers and procurement instructions
(e.g. manufacturer representative or distributor).

Disposition

(Rejected by Survey 3)

ID#:	1-105C *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical	**Survey?**:	NO
Page:	General		
Section:	General		

Issue

I could not find any requirements on documentation including hardware, software, diagnostics, maintenance procedures, etc.

Proposed Solution

Include section(s) on documentation including but not limited to:

Software Documentation

A Software Documentation manual shall be supplied for the ATC unit. The Software Documentation Manual shall include the following as a minimum:

1) Software documentation shall be sufficient to enable an experienced programmer to modify the Software. This shall include configuration information, make file description, code management documentation, data element descriptions, and instructions in how to setup and install all software on a machine with an empty, formatted hard drive. Documentation shall also identify the procedures for loading all Software / firmware.

2) The Software documentation shall also include description of all function calls, classes, subclasses, database schema, application of COTS software, and object models.

3) All source code shall include in-line comments and documentation in the header files to identify the function being performed, variables, and algorithms, control strategies, errors, etc.

4) All error codes shall be clearly documented in a single manual for easy reference.

5) Detailed documentation regarding the ATC Software structure shall be provided including object models, timing dependencies, linkages, and relationships between functions and procedures.

Disposition

(Rejected by Survey 3)

ID#:	1-105D *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical	**Survey?**:	NO
Page:	General		
Section:	General		

Issue

I could not find any requirements on documentation including hardware, software, diagnostics, maintenance procedures, etc.

Proposed Solution

Include section(s) on documentation including but not limited to:

Diagnostics Documentation

A Diagnostics Documentation manual shall be supplied for the ATC unit. The Diagnostics Documentation Manual shall include the following as a minimum:

1) Diagnostics documentation shall be sufficient to enable a User to configure the ATC unit for running the diagnostic tests. This shall include configuration information such as test jig connections, cable connections, and diagnostic program operation.

2) The Diagnostics documentation shall also include description of all tests, expected results, and possible errors detected.

3) All diagnostic error codes shall be clearly documented for easy reference.

Disposition

(Rejected by Survey 3)

ID#:	1-106A *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	Annex		
Section:	New		

Issue

It is desirable for the ATC to support reading its internal temperature. This could be provided on the Engine Board.

Proposed Solution

Suggest adding something like:

B.x.y Support for ATC Unit Temperature

1) ATC units shall include a method to read the internal temperature of the ATC unit based on a reading at the Engine Board.
2) The BSP shall provide an external function, int atc_temperature (void), within a library named libatc.so that returns the dry bulb temperature of the ATC unit expressed in tenths of a degree Celsius. The temperature shall be an instantaneous reading from within the device. The range of the function shall be -1000 to +1001 and the value 1001 shall indicate an error condition or missing value. (This is in agreement with standard temperature objects within NTCIP).

Disposition

(Rejected by Survey 3)

ID#:	1-106B *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	Annex		
Section:	New		

Issue

It is desirable for the ATC to support reading its internal temperature. This could be provided by the front panel interface as it would also approximate the cabinet temperature (rather than just the internal temperature of the ATC).

Proposed Solution

Suggest adding something like:

B.x.y Support for ATC Unit Temperature

1) ATC units shall include a method to read the internal temperature of the ATC unit at the front panel.
2) We would extend the Front Panel protocol to include a “Get temperature” command/response (since the front panel will most likely have a thermometer on it to activate/deactivate the heater).
3) The temperature reading shall be expressed in tenths of a degree Celsius. The temperature shall be an instantaneous reading from within the device. The range of the function shall be -1000 to +1001 and the value 1001 shall indicate an error condition or missing value. (This definition is based on existing NTCIP temperature objects)

Disposition

(Rejected by Survey 3)

ID#:	1-107	**Status:**	Closed (S1)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical		
Page:	74		
Section:	6.1.4.1 (Display)		

Issue

Displays should include an anti-reflective coating/cover.

Proposed Solution

Add the following:

Displays shall be clearly visible both during the daylight and nighttime and include an anti-reflective coating or cover over them.

Disposition

(Rejected by Survey 1)

ID#:	1-108 (*updated 5-28-2014*)	**Status:**	Closed (S2)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical		
Page:	132		
Section:	10.2 (new)		

Issue

We should include a general requirement that the applicable standards are adhered to.

Proposed Solution

Add a new section:

10.2 Applicable Standards

The equipment, materials, and manufacturing shall conform to the applicable requirements of the Underwriters Laboratories Incorporated (UL), the Telecommunications Industry Association (TIA), the National Electrical Code (NEC), National Electrical Safety Council (NESC), the American Society of Testing and Materials (ASTM), IPC, the Institute of Transportation Engineers (ITE), the American National Standards Institute (ANSI), and the National Electronic Manufacturers Association (NEMA). ATC units that are UL listed/certified shall be identified as such in the provided documentation.

Disposition

(Rejected by Survey 2)

ID#:	1-109A *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	127		
Section:	Section 9		

Issue

There are no sections on “human engineering”, etc similar to what TEES has. In particular, tools required for assembly and/or disassembly could be an issue.

Proposed Solution

Suggest adding requirements such as:

“The ATC unit shall be of modular design. Printed circuit boards (PCBs) shall be readily accessible for maintenance purposes. Designs shall minimize the amount of disassembly required in order to replace modules and/or PCBs. Only common hand tools, if any, shall be required for disassembly and assembly purposes.”

Disposition

(Rejected by Survey 3)

ID#:	1-109B *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	127		
Section:	Section 9		

Issue

There are no sections on “human engineering”, etc similar to what TEES has. In particular, tools required for assembly and/or disassembly could be an issue.

Proposed Solution

Suggest adding requirements similar to those found in TEES 2009:

9.x Human Engineering
9.x.1 Equipment
The Equipment shall be engineered for simplicity, ease of operation and maintenance.
9.x.2 Knobs
Knobs shall be a minimum of 0.5 in diameter and a minimum separation of 0.5 in edge to edge.
9.x.3 PCB
PCBs shall slide smoothly in their guides while being inserted into or removed from the frame and shall fit snugly into the plug-in PCB connectors. PCBs shall require a force no less than 4.5 lbs or greater than 50 lbs for insertion or removal.

Disposition

(Rejected by Survey 3)

ID#:	1-109C *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	127		
Section:	Section 9		

Issue

There are no sections on “design engineering”, etc similar to TEES 2009 section 1.5.2. Consider adding a new subsection to section 9. As an industry, we should ensure that the necessary precautions are taken to protect Users from potentially dangerous voltages. Additionally, the design should be specific to our environmental requirements.

Proposed Solution

Suggest adding requirements similar to those found in TEES 2009:

9.x Design Engineering

The design shall be inherently temperature compensated to prevent abnormal operation. The circuit design shall include such compensation as is necessary to overcome adverse effects due to temperature in the specified environmental range. The design shall take into consideration the protection of personnel from all dangerous voltages.

Disposition

(Rejected by Survey 3)

ID#:	1-109D *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	127		
Section:	Section 9		

Issue

There are no sections on “generated noise”, etc similar to TEES 2009 section 1.5.3. Consider adding a new subsection to section 9.

Proposed Solution

Suggest adding requirements similar to those found in TEES 2009:

9.x Generated Noise

No item, component or subassembly shall emit a noise level exceeding the peak level of 55 dBa when measured at a distance of one meter away from its surface, except as otherwise noted. No item, component or subassembly shall emit a noise level sufficient to interfere with processing and communication functions of the controller circuits.

Disposition

(Rejected by Survey 3)

ID#:	1-110 (*updated 5-28-2014*)	**Status:**	Closed (S2)
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical		
Page:	???		
Section:	Mechanical Design		

Issue

ATC designs should minimize the potential for water and contaminants from affecting the PCBs.

Details: Although the preference would be for solid top surfaces, TEES requires a minimum amount of opening available for airflow. This proposed solution just provides guidance that the openings should be located such that the solid portions protect the PCB and typical components. This could be achieved for example by have a solid top from about 0.75" – 1" wide over the top of the PCB. An exception for the PCB card guide holes would be allowed.

Proposed Solution

Add a new subsection within section 6.3.1 that includes requirements such as:

6.3.1.5 Unit Ventilation
ATC units shall be designed such that the top of the ATC unit housing minimizes any openings directly above all enclosed PCBs and most components such that dirt, dust, water and other debris cannot enter the unit from the top. Any required ventilation necessary to meet the environmental requirements herein shall be designed such that foreign debris and water cannot easily access the internal components.

Disposition

(Rejected by Survey 2)

ID#:	1-111 (*updated 5-28-2014*)	**Status:**	Closed (S2)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical		
Page:	Annex B or Page 49		
Section:	MAC Addresses or Section 4.4.3 Ethernet Interface (ENET)		

Issue

MAC addresses should be readily available without opening the ATC unit.

Proposed Solution

Note: This solution could be placed in either Annex B (a new subsection) or added to the text in Section 4.4.3 “Ethernet Interface (ENET)” .. editor’s choice or provide feedback in your comment(s).

“The MAC addresses of the Ethernet adapters shall be available to a user without opening/disassembling the ATC unit. This could be via external labels or through the ATC unit front panel display using a manufacturer provided utility where through a simple set of commands on the front panel buttons a field technician shall be able to determine the MAC addresses of the Ethernet adapters.”

Disposition

(Accepted by Survey 2)

ID#:	1-112A *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	142		
Section:	B.3.2		

Issue

In the Host EEPROM field descriptions, the MAC address entry needs to be changed (currently an error).

Proposed Solution

Change entry to:

“MAC Address (six bytes)”

Disposition

(Accepted by Survey 3)

ID#:	1-112B *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	142		
Section:	B.3.2		

Issue

In the Host EEPROM field descriptions, the entries for Ethernet should probably be changed to include DNS servers and Host Names.

Proposed Solution

Add entries to the Host EEPROM for DNS Server and Host Name.

Disposition

(Rejected by Survey 3)

ID#:	1-112C *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	142		
Section:	B.3.2		

Issue

In the Host EEPROM field descriptions, do we want to include a “local logical name” entry also?

Proposed Solution

Add an entry for “local logical name” to the Host EEPROM for each Ethernet port.

Disposition

(Rejected by Survey 3)

ID#:	1-113 *(updated 5-28-2014)*	**Status:**	Closed
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	Annex B		
Section:	General		

Issue

Suggest that ATCs be delivered with a utility to set the time/date/timezone/DST, and the Ethernet port settings.

Proposed Solution

Provide a configuration utility to support these features.

Disposition

Proposed solution rejected by WG leadership as out of scope.

ID#:	1-114	**Status:**	Closed (S1)
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical		
Page:	146		
Section:	B.4.1		

Issue

One should not be restricted to using specific USB memory devices.

Proposed Solution

Add a new requirement:

The ATC shall support commonly available USB memory devices; it shall not be necessary to purchase specific device(s) or devices from a specific manufacturer.

Disposition

(Rejected by Survey 1)

ID#:	1-115	**Status:**	Closed (S1)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical		
Page:	146		
Section:	B.4.1		

Issue

USB device should not be required for operation.

Proposed Solution

Add a new requirement:

The ATC shall not require that the USB memory device be permanently attached to the controller. The ATC shall not need the memory device to be present once any transfer operation(s) is complete.

Disposition

(Accepted by Survey 1)

ID#:	1-116 (*updated 5-28-2014*)	**Status:**	Closed (S2)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical		
Page:	146		
Section:	B.4.1		

Issue

Manufacturer shall include any necessary utilities, etc to use the USB to update the operating system, drivers, BSP, bootloader, etc.

Proposed Solution

Add a new requirement in one of the following locations:

1) In Section A.1, page 136, just after the discussion of the development system requirements
2) Possibly under a new B.9 section.

"The ATC manufacturer shall include any necessary utilities required to support the loading of the operating system, drivers, BSP, bootloader, and manufacturer specific utilities using a USB memory device and/or communication connection (Ethernet or serial).."

Disposition

(Accepted by Survey 2)

Proposed text added to Section A.1.

ID#:	1-117a (*updated 5-28-2014*)	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	166		
Section:	B.9 (new) or elsewhere		

Issue

(Original comment has had its proposed solution been broken down into its 6 component parts. Each part deals with either a different method or different software being transferred)

ATC units should be provided with utilities to (re)load operating system, drivers, BSP, bootloader, firmware, diagnostic programs and application programs via Ethernet , serial, and USB.

Further suggest that one should not have to open/disassemble the ATC.

Proposed Solution

Add a new section /subsection to include provision of this requirement. This new text could be placed in either:

1) At the end of Anenx A.1 possibly in a new subsection "5)"
2) In a new subsection A.3
3) A new subsection B.9

A) Include the following text within the standard:
"It shall be possible to download the firmware, diagnostic, utilities, or application software to the ATC through the Ethernet port and the serial port. If the serial port is used, the ATC shall be able to use the highest data rate available for that port in order to decrease programming time."

2) It shall be possible to download the operating system (Linux), board support package (BSP), drivers, and bootloader to the controller through the Ethernet port and the serial port. If the serial port is used, the ATC shall be able to use the highest data rate available for that port in order to decrease programming time.

1) Utilities to download embedded firmware within the ATC shall be provided whenever possible.

2) The ATC 'firmware' (i.e. basic functionality including boot loader, operating system, BSP, drivers, and API) shall be contained in Flash memory such that it can be loaded via the laptop interface or USB memory device on the unit with an operator present. It shall not be necessary to open or otherwise disassemble the unit, replace any device, or set any switch to affect the program update. The ATC unit shall note the version number of the firmware which shall be visible on the front panel display.

Commenter's Notes

(partially impacted by resolution to 1-116).

Disposition

(Rejected by Survey 3)

ID#:	1-117b (*updated 5-28-2014*)	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	166		
Section:	B.9 (new) or elsewhere		

Issue

(Original comment has had its proposed solution been broken down into its 6 component parts. Each part deals with either a different method or different software being transferred)

ATC units should be provided with utilities to (re)load operating system, drivers, BSP, bootloader, firmware, diagnostic programs and application programs via Ethernet , serial, and USB.

Further suggest that one should not have to open/disassemble the ATC.

Proposed Solution

Add a new section /subsection to include provision of this requirement. This new text could be placed in either:

1) At the end of Anenx A.1 possibly in a new subsection “5)”
2) In a new subsection A.3
3) A new subsection B.9

B) Include the following text within the standard:
“It shall be possible to download the operating system (Linux), board support package (BSP), drivers, and bootloader to the controller through the Ethernet port and the serial port. If the serial port is used, the ATC shall be able to use the highest data rate available for that port in order to decrease programming time.”

Disposition

(Rejected by Survey 3)

ID#:	1-117c (*updated 5-28-2014*)	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	166		
Section:	B.9 (new) or elsewhere		

Issue

(Original comment has had its proposed solution been broken down into its 6 component parts. Each part deals with either a different method or different software being transferred)

ATC units should be provided with utilities to (re)load operating system, drivers, BSP, bootloader, firmware, diagnostic programs and application programs via Ethernet , serial, and USB.

Further suggest that one should not have to open/disassemble the ATC.

Proposed Solution

Add a new section /subsection to include provision of this requirement. This new text could be placed in either:

1) At the end of Anenx A.1 possibly in a new subsection “5)”
2) In a new subsection A.3
3) A new subsection B.9

C) Include the following text within the standard:
“Utilities to download embedded firmware within the ATC shall be provided whenever possible.”

Disposition

(Rejected by Survey 3)

ID#:	1-117d (*updated 5-28-2014*)	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	166		
Section:	B.9 (new) or elsewhere		

Issue

(Original comment has had its proposed solution been broken down into its 6 component parts. Each part deals with either a different method or different software being transferred)

ATC units should be provided with utilities to (re)load operating system, drivers, BSP, bootloader, firmware, diagnostic programs and application programs via Ethernet , serial, and USB.

Further suggest that one should not have to open/disassemble the ATC.

Proposed Solution

Add a new section /subsection to include provision of this requirement. This new text could be placed in either:

1) At the end of Anenx A.1 possibly in a new subsection “5)”
2) In a new subsection A.3
3) A new subsection B.9

D) Include the following text within the standard:
“The ATC ‘firmware’ (i.e. basic functionality including boot loader, operating system, BSP, drivers, utilities and API) shall be contained in Flash memory such that it can be loaded via the laptop interface or USB memory device on the unit with an operator present.”

Disposition

(Rejected by Survey 3)

ID#:	1-117e (*updated 5-28-2014*)	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	166		
Section:	B.9 (new) or elsewhere		

Issue

(Original comment has had its proposed solution been broken down into its 6 component parts. Each part deals with either a different method or different software being transferred)

ATC units should be provided with utilities to (re)load operating system, drivers, BSP, bootloader, firmware, diagnostic programs and application programs via Ethernet , serial, and USB.

Further suggest that one should not have to open/disassemble the ATC.

Proposed Solution

Add a new section /subsection to include provision of this requirement. This new text could be placed in either:

1) At the end of Anenx A.1 possibly in a new subsection “5)”
2) In a new subsection A.3
3) A new subsection B.9

E) Include the following text within the standard (text may be added to the proposed solution text in comment #1-117d):
“It shall not be necessary to open or otherwise disassemble the unit, replace any device, or set any switch to affect the program update.”

Disposition

(Accepted by Survey 3)

Added to Section A.1.

ID#:	1-117f (*updated 5-28-2014*)	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	166		
Section:	B.9 (new) or elsewhere		

Issue

(Original comment has had its proposed solution been broken down into its 6 component parts. Each part deals with either a different method or different software being transferred)

ATC units should be provided with utilities to (re)load operating system, drivers, BSP, bootloader, firmware, diagnostic programs and application programs via Ethernet , serial, and USB.

Further suggest that one should not have to open/disassemble the ATC.

Proposed Solution

Add a new section /subsection to include provision of this requirement. This new text could be placed in either:

1) At the end of Anenx A.1 possibly in a new subsection “5)”
2) In a new subsection A.3
3) A new subsection B.9

(The purpose of this text is to require the new version number to be displayed upon completion of the update)

F) Include the following text within the standard (text may be added to the proposed solution text in comments #1-117d and #1-117e):
“The ATC unit shall note the version number of the firmware which shall be visible on the front panel display.”

Disposition

(Rejected by Survey 3)

ID#:	1-118A1 *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	General		
Section:	General		

Issue

Do we want to require:
1) Gold-plated contacts for connectors? E.g. Tin contacts are currently allowed which corrode faster.
2) Machined contacts? (stamped contacts have a tendency of bending, etc)
3) Metal shell connectors?
Currently, metal shell is only required for NEMA Port 1 and Port 2.

Proposed Solution

Suggest adding the following requirements to connector Port 1 specified in section 5.2.3.1:

"Port 1 connectors shall utilize machined contacts."

Disposition

(Rejected by Survey 3)

ID#:	1-118A2 *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	General		
Section:	General		

Issue

Do we want to require:
1) Gold-plated contacts for connectors? E.g. Tin contacts are currently allowed which corrode faster.
2) Machined contacts? (stamped contacts have a tendency of bending, etc)
3) Metal shell connectors?
Currently, metal shell is only required for NEMA Port 1 and Port 2.

Proposed Solution

Suggest adding the following requirements to connector Port 1 specified in section 5.2.3.1:

"Port 1 connectors shall utilize contacts with 15 millionths of an inch minimum gold plating in the mating areas."

Disposition

(Rejected by Survey 3)

ID#:	1-118B1 *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	General		
Section:	General		

Issue

Do we want to require:
1) Gold-plated contacts for connectors? E.g. Tin contacts are currently allowed which corrode faster.
2) Machined contacts? (stamped contacts have a tendency of bending, etc)
3) Metal shell connectors?
Currently, metal shell is only required for NEMA Port 1 and Port 2.

Proposed Solution

Suggest adding the following requirements to connector Port 2 specified in section 5.2.3.1:

Port 2 connectors shall utilize machined contacts.

Disposition

(Rejected by Survey 3)

ID#:	1-118B2 *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	General		
Section:	General		

Issue

Do we want to require:
1) Gold-plated contacts for connectors? E.g. Tin contacts are currently allowed which corrode faster.
2) Machined contacts? (stamped contacts have a tendency of bending, etc)
3) Metal shell connectors?
Currently, metal shell is only required for NEMA Port 1 and Port 2.

Proposed Solution

Suggest adding the following requirements to connector Port 2 specified in section 5.2.3.1:

Port 2 connectors shall utilize contacts with 15 millionths of an inch minimum gold plating in the mating areas.

Disposition

(Rejected by Survey 3)

ID#:	1-118C1 *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	General		
Section:	General		

Issue

Do we want to require:
1) Gold-plated contacts for connectors? E.g. Tin contacts are currently allowed which corrode faster.
2) Machined contacts? (stamped contacts have a tendency of bending, etc)
3) Metal shell connectors?
Currently, metal shell is only required for NEMA Port 1 and Port 2.

Proposed Solution

Suggest adding the following requirements to connector Port 3 specified in section 5.2.3.1:

Port 3 connectors shall utilize machined contacts.

Disposition

(Rejected by Survey 3)

ID#:	1-118C2 *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	General		
Section:	General		

Issue

Do we want to require:
1) Gold-plated contacts for connectors? E.g. Tin contacts are currently allowed which corrode faster.
2) Machined contacts? (stamped contacts have a tendency of bending, etc)
3) Metal shell connectors?
Currently, metal shell is only required for NEMA Port 1 and Port 2.

Proposed Solution

Suggest adding the following requirements to connector Port 3 specified in section 5.2.3.1:

Port 3 connectors shall utilize contacts with 15 millionths of an inch minimum gold plating in the mating areas.

Disposition

(Rejected by Survey 3)

ID#:	1-118D1 *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	General		
Section:	General		

Issue

Do we want to require:
1) Gold-plated contacts for connectors? E.g. Tin contacts are currently allowed which corrode faster.
2) Machined contacts? (stamped contacts have a tendency of bending, etc)
3) Metal shell connectors?
Currently, metal shell is only required for NEMA Port 1 and Port 2.

Proposed Solution

Suggest adding the following requirements to connector C50S specified in section 5.2.3.2:

C50S connectors shall utilize machined contacts.

Disposition

(Rejected by Survey 3)

ID#:	1-118D2 *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	General		
Section:	General		

Issue

Do we want to require:
1) Gold-plated contacts for connectors? E.g. Tin contacts are currently allowed which corrode faster.
2) Machined contacts? (stamped contacts have a tendency of bending, etc)
3) Metal shell connectors?
Currently, metal shell is only required for NEMA Port 1 and Port 2.

Proposed Solution

Suggest adding the following requirements to connector C50S specified in section 5.2.3.2:

C50S connectors shall utilize contacts with 15 millionths of an inch minimum gold plating in the mating areas.

Disposition

(Rejected by Survey 3)

ID#:	1-118E *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	General		
Section:	General		

Issue

Do we want to require:
1) Gold-plated contacts for connectors? E.g. Tin contacts are currently allowed which corrode faster.
2) Machined contacts? (stamped contacts have a tendency of bending, etc)
3) Metal shell connectors?
Currently, metal shell is only required for NEMA Port 1 and Port 2.

Proposed Solution

Suggest adding the following requirements to connector C50J specified in section 5.2.3.2:

C50J connectors shall utilize contacts with 15 millionths of an inch minimum gold plating in the mating areas.

Disposition

(Rejected by Survey 3)

ID#:	1-118F1 *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	General		
Section:	General		

Issue

Do we want to require:
1) Gold-plated contacts for connectors? E.g. Tin contacts are currently allowed which corrode faster.
2) Machined contacts? (stamped contacts have a tendency of bending, etc)
3) Metal shell connectors?
Currently, metal shell is only required for NEMA Port 1 and Port 2.

Proposed Solution

Suggest adding the following requirements to connector C60P specified in section 5.2.3.2:

C60P connectors shall utilize machined contacts.

Disposition

(Rejected by Survey 3)

ID#:	1-118F2 *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	General		
Section:	General		

Issue

Do we want to require:
1) Gold-plated contacts for connectors? E.g. Tin contacts are currently allowed which corrode faster.
2) Machined contacts? (stamped contacts have a tendency of bending, etc)
3) Metal shell connectors?
Currently, metal shell is only required for NEMA Port 1 and Port 2.

Proposed Solution

Suggest adding the following requirements to connector C60P specified in section 5.2.3.2:

C60P connectors shall utilize contacts with 15 millionths of an inch minimum gold plating in the mating areas.

Disposition

(Rejected by Survey 3)

ID#:	1-118G1 *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	General		
Section:	General		

Issue

Do we want to require:
1) Gold-plated contacts for connectors? E.g. Tin contacts are currently allowed which corrode faster.
2) Machined contacts? (stamped contacts have a tendency of bending, etc)
3) Metal shell connectors?
Currently, metal shell is only required for NEMA Port 1 and Port 2.

Proposed Solution

Suggest adding the following requirements to connector C12S specified in section 5.2.3.2:

C12S connectors shall utilize machined contacts.

Disposition

(Rejected by Survey 3)

ID#:	1-118G2 *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	General		
Section:	General		

Issue

Do we want to require:
1) Gold-plated contacts for connectors? E.g. Tin contacts are currently allowed which corrode faster.
2) Machined contacts? (stamped contacts have a tendency of bending, etc)
3) Metal shell connectors?
Currently, metal shell is only required for NEMA Port 1 and Port 2.

Proposed Solution

Suggest adding the following requirements to connector C12S specified in section 5.2.3.2:

C12S connectors shall utilize contacts with 15 millionths of an inch minimum gold plating in the mating areas.

Disposition

(Rejected by Survey 3)

ID#:	1-118H1 *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	General		
Section:	General		

Issue

Do we want to require:
1) Gold-plated contacts for connectors? E.g. Tin contacts are currently allowed which corrode faster.
2) Machined contacts? (stamped contacts have a tendency of bending, etc)
3) Metal shell connectors?
Currently, metal shell is only required for NEMA Port 1 and Port 2.

Proposed Solution

Suggest adding the following requirements to connector C13S specified in section 5.2.3.2:

C13S connectors shall utilize machined contacts.

Disposition

(Rejected by Survey 3)

ID#:	1-118H2 *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	General		
Section:	General		

Issue

Do we want to require:
1) Gold-plated contacts for connectors? E.g. Tin contacts are currently allowed which corrode faster.
2) Machined contacts? (stamped contacts have a tendency of bending, etc)
3) Metal shell connectors?
Currently, metal shell is only required for NEMA Port 1 and Port 2.

Proposed Solution

Suggest adding the following requirements to connector C13S specified in section 5.2.3.2:

C13S connectors shall utilize contacts with 15 millionths of an inch minimum gold plating in the mating areas.

Disposition

(Rejected by Survey 3)

ID#:	1-118J1 *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	General		
Section:	General		

Issue

Do we want to require:
1) Gold-plated contacts for connectors? E.g. Tin contacts are currently allowed which corrode faster.
2) Machined contacts? (stamped contacts have a tendency of bending, etc)
3) Metal shell connectors?
Currently, metal shell is only required for NEMA Port 1 and Port 2.

Proposed Solution

Suggest adding the following requirements to connector C21S/22S (DE-9S versions) specified in section 5.2.3.2:

C21S/22S (DE-9S versions) connectors shall utilize machined contacts.

Disposition

(Rejected by Survey 3)

ID#:	1-118J2 *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	General		
Section:	General		

Issue

Do we want to require:
1) Gold-plated contacts for connectors? E.g. Tin contacts are currently allowed which corrode faster.
2) Machined contacts? (stamped contacts have a tendency of bending, etc)
3) Metal shell connectors?
Currently, metal shell is only required for NEMA Port 1 and Port 2.

Proposed Solution

Suggest adding the following requirements to connector C21S/22S (DE-9S versions) specified in section 5.2.3.2:

C21S/22S (DE-9S versions) connectors shall utilize contacts with 15 millionths of an inch minimum gold plating in the mating areas.

Disposition

(Rejected by Survey 3)

ID#:	1-118K1 *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	General		
Section:	General		

Issue

Do we want to require:
1) Gold-plated contacts for connectors? E.g. Tin contacts are currently allowed which corrode faster.
2) Machined contacts? (stamped contacts have a tendency of bending, etc)
3) Metal shell connectors?
Currently, metal shell is only required for NEMA Port 1 and Port 2.

Proposed Solution

Suggest adding the following requirements to connector C21S/22S (DA-15S versions) specified in section 5.2.3.2:

C21S/22S (DA-15S versions) connectors shall utilize machined contacts.

Disposition

(Rejected by Survey 3)

ID#:	1-118K2 *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	General		
Section:	General		

Issue

Do we want to require:
1) Gold-plated contacts for connectors? E.g. Tin contacts are currently allowed which corrode faster.
2) Machined contacts? (stamped contacts have a tendency of bending, etc)
3) Metal shell connectors?
Currently, metal shell is only required for NEMA Port 1 and Port 2.

Proposed Solution

Suggest adding the following requirements to connector C21S/22S (DA-15S versions) specified in section 5.2.3.2:

C21S/22S (DA-15S versions) connectors shall utilize contacts with 15 millionths of an inch minimum gold plating in the mating areas.

Disposition

(Rejected by Survey 3)

ID#:	1-118L *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	General		
Section:	General		

Issue

Do we want to require:
1) Gold-plated contacts for connectors? E.g. Tin contacts are currently allowed which corrode faster.
2) Machined contacts? (stamped contacts have a tendency of bending, etc)
3) Metal shell connectors?
Currently, metal shell is only required for NEMA Port 1 and Port 2.

Proposed Solution

Suggest adding the following requirements to connector C2S/20S specified in section 5.2.3.2:

C2S/20S connectors shall utilize contacts with 15 millionths of an inch minimum gold plating in the mating areas.

Disposition

(Rejected by Survey 3)

ID#:	1-119 (*updated 5-28-2014*)	**Status:**	Closed (S2)
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical		
Page:	127		
Section:	9.1.14.x		

Issue

Suggest that we require “jack screws” to not loosen during use.

Proposed Solution

Create/add to a new subsection in 9.1.14 as follows: (Note subsection may be created by #1-118)

9.1.14.5 D-Subminiature Connectors
Unless specifically stated otherwise within this document, “D” subminiature type connectors shall be equipped with jack screw sockets to accept commonly used screw down retention hardware. These connectors shall mate with a compatible “D” type connector that is equipped with holding screws. Note that the construction shall be such that the retention nuts that are affixed to the connectors shall not loosen during use.

Disposition

(Rejected by Survey 2)

ID#:	1-120A *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	General		
Section:	General		

Issue

Since RJ-45 jacks could support various communications interfaces, I suggest that their interface type be labeled next to the jack.

Proposed Solution

Add the requirement:

Connector C50J shall have a label in close proximity to the jack stating its electrical interface type (e.g. EIA-561, EIA-574, or the more generic “RS-232”).

Disposition

(Rejected by Survey 3)

ID#:	1-120B *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	General		
Section:	General		

Issue

Since RJ-45 jacks could support various communications interfaces, I suggest that their interface type be labeled next to the jack. For example, it has been raised that C50J is confusing to Users. Additionally, a User is required to know which Ethernet Port the jack is connected so that they are sure they are connecting the device to the correct network (e.g. one may not want to connect a CMU to the communication network).

Proposed Solution

Add the requirement to the end of the last paragraph of section 5.1.3:

All RJ-45 Ethernet ports shall have a label in close proximity to the jack identifying its electrical interface type and Engine Board port connection (E.g. ENET1, ENET1A, etc) even if its function is also labeled on the unit (e.g. Network).

Disposition

(Rejected by Survey 3)

ID#:	1-121 (*updated 5-28-2014*)	**Status:**	Closed (S2)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical		
Page:	Annex A or B		
Section:	Annex A or B		

Issue

Should we include a requirement that only high-level, “current” programming languages be used?

Proposed Solution

Suggest adding to the following text into one of these areas:

1) As a subsection of A.1 … e.g. “5)”
2) Near the development system text in section A.1 4)
3) As a new section A.x (other comments such as 1-116 might have text to go in here also)
4) As a new subsection within Annex B

“All Software shall be written in high level languages such as C, C++, Java or another language approved by ATC Joint Committee. The Software shall be compiled with current versions of the appropriate compilers and the compilers and development utilities shall be current at the time of delivery. “Current” shall mean that the product that is available from the ATC manufacturer for development purposes.”

Disposition

(Rejected by Survey 2)

ID#:	1-122	**Status:**	Closed (S1)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical		
Page:	29		
Section:	3.1.3		

Issue

I suggest that the following paragraph be deleted:

“Informative: It is known that tracking …”.

Proposed Solution

Delete as suggested.

Disposition

(Accepted by Survey 1)

ID#:	1-123	**Status:**	Closed (S1)
Commenter:	CID1	**Priority**:	0
Comment Type:	Editorial		
Page:	168		
Section:	Appendix C		

Issue

There is minimal concern of the O/S becoming unavailable.

Proposed Solution

Change last sentence from "...should either this O/S and/or the CPU become unavailable" to the following "should the CPU become unavailable".

Disposition

(Accepted by Survey 1)

ID#:	1-124 *(updated 5-28-2014)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	48		
Section:	4.4.3		

Issue

Multiple USB ports: An ATC that supports multiple USB shall allow all/multiple USB ports to be used concurrently without restrictions. Of concern is that a User can concurrently put in 2 or more memory devices but only if they use specific ports (e.g. 2 & 3 are okay, but 1 & 2 are not allowed).

Proposed Solution

Add a new requirement to section B.4.1 (or elsewhere as applicable) stating that all USB ports shall be useable concurrently without restrictions.

Disposition

(Rejected by Survey 3)

ID#:	1-125 *(updated 5-28-2014)*	**Status:**	Closed
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	146		
Section:	Appendix B		

Issue

Multiple USB ports: The location of the startup file changes depending on whether or not multiple USB ports are present. Also, how does the user know which port is the first one? Either label the "first port" or stipulate that any USB may be used (and where the file shall be located on the device). Also, if multiple USB devices are allowed to have a startup file then what happens if a startup file is found on more than one device? Should the ATC run each of them in sequence (based on port order)?

Proposed Solution

Disposition

Standard already addresses startup issue (first port only). If multiple USB ports, 'first' port needs to be labeled.

Appropriate text added to Section B.4.1.

ID#:	1-126 *(updated 1-20-2015)*	**Status:**	Closed
Commenter:	CID1	**Priority**:	0
Comment Type:	Editorial	**Survey?**:	NO
Page:	16		
Section:	2.1		

Issue

There seems to be a misunderstanding that a 2070 is an ATC (or at least should be able to meet the ATC standard if it uses an Engine Board). This was never the intent. Maybe in Section 2.1 this should be emphasized and that only the communications slots are meant to be compatible with 2070-type communication modules.

This issue becomes more confusing to Users when they review Figure 2-2 which shows an ATC Engine Board being installed in a "2070 Host Module", further implying a 2070 controller is, or could become, an ATC. As TEES currently stands, the resulting product would not satisfy all ATC requirements and hence is not an ATC.

Proposed Solution

I suggest that we add a clear, unambiguous statement within the standard (e.g. section 1.2 or 2.1) that clearly states that a controller is not an ATC just because it uses an ATC Engine Board. This applies equally to a controller whether it is 2070-based or not.

Disposition

Guidance statement added to Section 2.1.

ID#:	1-127 *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	63		
Section:	5.3.2.1		

Issue

Section 5.3.2.1 states that it is "intended to represent the 2070-7A". Not sure this is really true as it only defines the requirements for one port, does not require two ports, and may be mixed with other port types on a single module. Building a product/module that minimally conforms to section 5.3.2.1 does not create a product that satisfies the 2070-7A standard or TEES specification.

Furthermore, a 2070-7A module has other requirements that the ATC does not require (e.g. manual disable switch for channel 1).

Lastly, this is within the “modulation/demodulation” subsection and we should just keep the requirements to that topic.

Proposed Solution

Remove the statement “Guidance: This paragraph is intended to represent the present 2070-7A.” that is found that the beginning of the section.

Disposition

(Accepted by Survey 3)

ID#:	1-128 *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	64		
Section:	5.3.2.2		

Issue

Section 5.3.2.2 states that it is "intended to represent the 2070-7B". Not sure this is really true as it only defines the requirements for one port, does not require two ports, and may be mixed with other port types on a single module. Building a product/module that minimally conforms to section 5.3.2.2 does not create a product that satisfies the 2070-7B standard or TEES specification.

Furthermore, a 2070-7B module has other requirements that the ATC does not require (e.g. manual disable switch for channel 1).

Lastly, this is within the “modulation/demodulation” subsection and we should just keep the requirements to that topic.

Proposed Solution

Remove the statement “Guidance: This paragraph is intended to represent the present 2070-7B.” that is found that the beginning of the section.

Disposition

(Accepted by Survey 3)

ID#:	1-129 *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	0
Comment Type:	Technical	**Survey?**:	NO
Page:	70		
Section:	5.4		

Issue

Section 5.4 implies that certain industry standard communication modules (e.g. 2070-7A) meet the ATC 5201 standard also. This may not be true. Alternatively, a module may meet the ATC 5201 standard but not meet other standards (e.g. ATC 5202 ... the national 2070 standard). In this latter case, I do not agree that a communication module should be labeled with a (standard) product name from a standard that it does not conform to.

Lastly, manufacturers currently have numerous other communications modules that are not included in the list (which we would have to add if we keep it). Again, these other modules may or may not satisfy the ATC requirements yet they may satisfy the TEES specification.

Proposed Solution

I suggest that we remove the following "guidance" statement.

Guidance:
The following is a list of the existing Communications Interface Versions:

Part Number	Description
2070-6A	Dual 300 to 1200 bps Modem
2070-6B	Dual 0 to 9600 bps Modem
2070-7A	Dual EIA-574 Serial Interface
2070-7B	Dual EIA-485 Serial Interface

As new versions are defined, this list will expand.

Each version may be implemented using any of the following three design methods:

- Dedicated circuit design, each version ordered as separate vendor part numbers
- Common base board, with selectable modulation via plug-in circuit assemblies
- Common board, with selectable modulation via digital signal processor (DSP) software

Disposition

(Accepted by Survey 3)

As proposed.

ID#:	1-130 *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical	**Survey?**:	NO
Page:	43		
Section:	4.4.1		

Issue

Section 4.4.1 (more details regarding additional comment #6). If the host board or engine board has standby power storage on it then do we want to define where it is charged from? For example, if one charges the 2070-4A power supply for 1 hour (per standard) but then plugs in a nearly depleted host/engine board with standby storage on it, then this secondary storage may be "charged" from the +5V_STANDBY source thereby exceeding the allowable maximum draw.

Proposed Solution

Suggest that +5V_Primary be used to charge host/engine board standby sources OR that text be included that they must be charged for one hour prior to testing.

Discussion
(10-23-14) Discussion of Herasmo email (via Ralph) of 10-23-14.

Disposition

(Rejected by Survey 3)

ID#:	1-131 *(updated 5-28-2014)*	**Status:**	Closed
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical	**Survey?**:	NO
Page:	44, 120		
Section:	4.4.3, 8.1.1		

Issue

Sections 4.4.3 & 8.1.1: Suggest that communication tests limits be increased. For example, suggest that Ethernet loading be increased to, for example, 40% or higher in order to reflect typical loaded networks such as those that caused problems for 2070 controllers. Also, do we want to require a minimum free CPU utilization during these tests? Next, should we require ports to be operated at maximum rates to stress-test the designs? During real operation how does the API impact performance?

Disposition

Update Section 8.1.1 as follows:

8.1.1 Engine Board Communications Loading Test (DAT)

Guidance: This test may require the use of a test fixture to expose the necessary serial ports and/or signals.

The communication channel loads for load testing purposes, with only required test applications present, shall be the following:

- SP1 and SP2 shall each be operated continuously in a single port external loopback configuration at 115.2 kbps, asynchronous mode
- SP3, SP5, SP8: Any two of these ports shall be operated continuously at 614.4 kbps, synchropnous SDLC mode. The third port shall be operated continuously at 115.2 kbps, asynchronous mode. Each port shall be configured as a single port external loopback.
- SP4 and SP6 shall be operated at 115.2 kbps asynchronous mode. One of these ports shall be configured to operate in a continuous external loopback mode while the other port shall be available for test interaction using either a display/keypad or serially connected terminal.
- ENET1 and ENET2 shall each be operated in continuous full-duplex mode at 5Mbps using UDP only with alternate 512 byte and 1024 byte packet sizes. Network traffic must be external to the Engine Board and without any other network traffic occuring (isolated subnet).

All serial ports under test shall continuously send the text

">The quick[0xF7][0xFE]brow[0xBE]n_fox jumps }over the~|azy dog?[0xFE]"

(in Hex)

"3E 54 68 65 20 71 75 69 63 6B F7 FE 62 72 6F 77 BE 6E 5F 66 6F 78 20 6A 75 6D 70 73 20 7D 6F 76 65 72 20 74 68 65 7E 7C 61 7A 79 20 64 6F 67 3F FE"

Flow control shall not be used. Test duration shall be eight hours and must be error-free for successful completion.

ID#:	1-132 *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	1
Comment Type:	Editorial	**Survey?**:	NO
Page:	(numerous)		
Section:	(numerous)		

Issue

Use of 2070 module nomenclature: Somehow we need to tie in the 2070 standard requirements for standardized modules better. For example, if a manufacturer supplies a standard 2070 module as part of (or with) his ATC, then that module needs to meet the ATC2070 standard. I am concerned about modules being supplied with "2070-xx" on them and they do not meet the relevant 2070 standards. My issue is that a field technician may mistakenly take such a labeled module and install it into a "true" 2070 as a replacement not knowing that the module does not meet the 2070 standard.

Proposed Solution

I suggest that modules compliant to ATC/ATC2070 standards be labeled as ATC 2070-xx. It would be acceptable to use a sticker for adding “ATC” to an existing, conformant module. We should also include a note that modules without the “ATC” label may not be conformant to the ATC / ATC2070 standards (i.e. these are TEES 2070 modules).

Commenter’s Notes

This is a level 2 item.

Disposition

(Rejected by Survey 3)

ID#:	1-133	**Status:**	Closed
Commenter:	CID1	**Priority**:	2
Comment Type:	Technical		
Page:	41		
Section:	4.3.1		

Issue

The method of evaluating processor performance needs to be revisited. For example, if the Dhrstone test code fits within the internally cache of a processor then the actual engine board performance is independent of the memory bus width, wait states, access times, and external bus speed. This was not our intent.

Proposed Solution

Disposition

Use mimimum Coremark of 500 as processor performance benchmark.

ID#:	1-134 *(updated 5-28-2014)*	**Status:**	Closed
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical	**Survey?**:	NO
Page:	42		
Section:	4.3.3		

Issue

Section 4.3.3 DRAM: The standard doesn't really state our desires. For example, SDRAM uses a clock signal to conrol access times to the memory (just like PCs) and the standard specifies "wait states" which really don't exist anymore (in the manner originally specified). Just like a PC one can use multiple speeds of SDRAM in a design and even operate them at much slower speeds since processors typically provide programmable bus speeds. For example, one could buy 143 MHz SDRAM (typical for these days/processors) and connect them to a processor that has a maximum bus speed of 133 MHz ... this is a good match. However, since the bus speed is programmable, the Engine Board may operate the SDRAM at a lower value such as 100 Mhz, 80 MHz, 66.7 MHz, 50 MHz, or even lower crippling overall performance. Our Drystone test may not catch this since the test may be operating entirely within the processor cache. Furthermore, one cannot substitute "CAS latency" (CL) for "wait states" directly. Memory ICs are available with multiple CL values at the same bus speed ... the lower the CL at a specific fequency, the faster the overall access.

Proposed Solution

Disposition

Memory requirements updated by Comment 1-26.

ID#:	1-135 *(updated 5-28-2014)*	**Status:**	Closed
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical	**Survey?**:	NO
Page:	42		
Section:	4.3.3		

Issue

Section 4.3.3 FLASH: The sentence "Access to this memory shall be accomplished with wait states totaling no more than 100 ns ..." is a bit confusing. Do we mean that total access time is 100 ns or just that the amount of wait states is limited to 100 ns? Again, this clause is based on old technology and design methods from the 68360/TEES days and has not been updated at all. So what is our real intent here? I suggest a minor rewording so that it clearly states that total access is limited to 100 ns. (easily achieveable by todays standard, easily available components).

Proposed Solution

Disposition

Memory requirements updated by Comment 1-26.

ID#:	1-136 *(updated 5-28-2014)*	**Status:**	Closed
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical	**Survey?**:	NO
Page:	42		
Section:	4.3.3		

Issue

Section 4.3.3 SRAM: The sentence "Access to this memory shall be accomplished with wait states totaling no more than 100 ns ..." is a bit confusing. Do we mean that total access time is 100 ns or just that the amount of wait states is limited to 100 ns? Again, this clause is based on old technology and design methods from the 68360/TEES days and has not been updated at all. So what is our real intent here? I suggest a minor rewording so that it clearly states that total access is limited to 100 ns. (easily achieveable by todays standard, easily available components).

Proposed Solution

Disposition

Memory requirements updated by Comment 1-26.

ID#:	1-137 *(updated 1-20-2015)*	**Status:**	Closed (S3)
Commenter:	CID1	**Priority**:	1
Comment Type:	Technical	**Survey?**:	NO
Page:	43		
Section:	4.4.1		

Issue

Section 4.4.1 Power: The VSTANDBY_5 power usage specification and test(s) need to be revised. First, the standard describes two tests which are totally different and will probably result in dramatically different results. The first test is based on power supplied to the Engine Board as a whole via the VSTANDBY_5 pin. This test is valid as it measures the total consumption of the engine board and hence provides a true indication of how long the power supply can maintain data retention. The second test (measuring only at the RTC and SRAM) is invalid as it does not consider any VSTANDBY_5 used by other components on the Engine Board such as micro-regulators (LDOs), supervisor ICs, etc.

This also raises the issue of the temperature used during the test. For example, common devices may have Icc = 1uA at +25C but will be Icc = 3uA over the full temperature range.

An ATC may pass one test method but fail the other test method. An ATC should be required to pass both test methods.

Proposed Solution

I suggest that we consider modifying this second test to state "Alternatively, a maximum instantaneous current draw of 6.0 µA measured at the VSTANDBY_5 pin on the Engine Board, at a VSTANDBY_5 voltage of 2.5 VDC, and at 25° C, -34° C, and +74° C, shall be considered equivalent to the maximum average current draw requirement stated above."

Disposition

(Rejected by Survey 3)

ID#:	1-138 *(added 6-27-2014)*	**Status:**	Closed
Commenter:	CID1	**Priority**:	3
Comment Type:	Technical		
Page:	127		
Section:	9.1.4		

Issue

USB devices typically connect the Ground pin to the connector chassis. ATC 5201 section 9.1.4 requires that "all external metallic surfaces such as faceplates, chassis and connector housings shall be connected to the equipment ground signal input of the power supply". This results in ATC Logic Ground being connected to Chassis Ground which violates (section 9.1.4) "electrical isolation shall be provided between DC ground, Equipment Ground (EG) ".

The USB port was only intended for use with "memory devices" but their use appears to be expanding (especially when ATCs may have multiple USB ports on them). Extending their use further complicates the issue since the attached (non-memory) device may be connected to a noisy source (laptop AC power supply, network equipment, modem, etc) which could inject additional noise in the ATC logic ground.

Proposed Solution

There are various approaches to solving this, especially if the USB port(s) only support USB 1.1. First, do not connect the USB connector shell directly to Chassis Ground (EG). Options include connecting it to Logic Ground via a filter, ferrite bead, etc ...this approach works for memory devices. Secondly, one could fully isloate the USB ports from Logic Ground and V_PRIMARY ... more effort/cost. Third is to leave the USB connector chassis floating on the ATC ... I don't know what implications there are to all of the devices that Users may attach.

There are multiple approaches available for solving the problem, some are easy/cheap IF we only allow memory devices to be connected but how do we control what Users use the (multiple) USB ports for. In particular, I would like to propose that we allow "SP4" to be a USB device port (i.e. integrate a USB-serial device internally to the ATC) so that currnet laptops, smartphones, etc can be directly connected to the ATC.

Disposition

Provide the following guidance:

Guidance: The USB port(s) provided by an ATC conformant controller are defined for use as temporary access points for the uploading and downloading of controller logs, diagnostics, firmware upgrades etc.

The user needs to be aware that many USB devices connect their logic ground pin and the metal shell of their connector together. This has the effect of connecting the controllers' logic ground and earth / chassis ground together when the USB device is plugged into the controller. This configuration, though it may be temporarily acceptable for a very short time, will seriously degrade the electrical, transient protection system of the controller and cabinet assembly if it remains permanently installed and should not be permitted.

If the user of an ATC controller desires to utilize the USB port(s) for permanent attachment of a device, such as a USB hard drive, it is the responsibility of the user to ensure that a path between the controllers' logic ground and earth ground is not provided when the USB device connector is inserted. Use of a USB device or cable that insulates its ground pin from its connector shell or some other USB isolation scheme should meet this requirement.

ID#:	1-139 *(added 1-7-2015)*	**Status:**	Closed
Commenter:	CID1	**Priority**:	2
Comment Type:	Technical		
Page:			
Section:	4.4.3		

Issue

I suggest that in order to complete the Expanded SPI port that we add a SPI_IRQ pin to the Engine Board pinout. This signal is required to support complex SPI-devices.

We added expanded SPI to version ATC v6.10+ and this allows numerous SPI devices to be added to a ATC Host Board. Both the Host EEPROM and Datakey are simple memory devices that do not generate interrupts during operation. Adding simple SPI devices such as temperature sensors can also be accommodated in terms of their basic functionality. However, there are only so many basic types of devices and adding complex SPI devices could require supporting Interrupt Requests from these SPI devices.

Proposed Solution

Add a "SPI_IRQ" signal to connector P1 (P1-43) with the following description in the SPI sub-section of 4.4.3.

"SPI_IRQ: An active-low, logic-level input signal that indicates that a Host Board SPI device is requesting an interrupt to the Engine Board. All Host Board SPI devices shall share the same SPI_IRQ signal which shall remain logic-level low while any connected Host Board SPI device is requesting interrupt service. Host Board SPI devices shall use open-drain IRQ signals configured as a "wired-OR".

Disposition

Adopt recommended language (or similar).
SP3_TXC_EXT shall be reassigned as the SPI_IRQ interrupt pin.
See Comment 4-20 for a complete reference for SPI-related changes.

ID#: 1-140 *(added 1-7-2015)*

Status: Closed

Commenter: CID1

Priority: 1

Comment Type: Technical

Page:

Section:

Issue

The standard defines an Engine Board outline/envelope and I am concerned about SD Card Socket positioning. First, most sockets (especially multi-card sockets) are slightly higher than our 0.1" bottom component height limitation and I would like to propose that we allow an exeception for card sockets to be upto 0.145" (a 0.045" protrusion into the clear space). so that cards could be bottom mounted.

Second, I am concerned about the actual card sticking out beyond the Engine Board outline when installed in the socket. This could create an incompatibility for the Engine Board and different vendors Host Boards/ATC units. With a majority of embedded sockets being the push/pull type, the user needs to be able to grab the SD card in order to remove it.

Although most vendors would probably place the socket so the the card enters via a short edge of the Engine Board, it is possible to carefully place the socket so that the card enters/exits via the long side betwen the mounting holes and the EB Hirose connectors ... these four locations are only available for top side socket mounting.

So the questions are as follows:

1. Do we allow the SD card to protrude outside of the engine board envelope when installed?
2. Do we allow the SD card socket to be bottom mounted and exceed the component height restriction?
3. If we allow the SD Card to protrude outside the engine board outline, do we want to restrict the approximate location so that compatible Host Boards/ATC units can be built?

Proposed Solution

Disposition

Modify standard Engine Board envelope to permit installed SD card to extend 0.1” past short end of EB. Further, bottom-mounted socket may exceed height restriction by up to 0.045”.

ID#: 1-141 *(added 1-7-2015)*

Status: Closed

Commenter: CID1

Priority: 0

Comment Type: Technical

Page:

Section:

Issue

Reduce number of concurrent SDLC Ports to two (2) with both capable of operating concurrently at maximum synchronous baud rate (614.4 kbps), full-duplex.

We have changed the ports that need to support support SDLC to be only SP3, SP5 and SP8 due to their potential usage within existing cabinet architectures based on User feedback regarding potential use. However, the number of ports that need to concurrently support SDLC is only two. We are also trying to establish performance measures for the serial ports and Ethernet.

Proposed Solution

Ports SP3, SP5, and SP8 all need the ability to support SDLC (using TXD, RXD, TXC_INT, and RXC_EXT); however, the Engine Board only needs to support SDLC on two ports concurrently. These two ports shall be capable of supporting 614.4 kbps, full-duplex operation concurrently. The third port shall be capable of supporting the maximum asynchronous baud rate (115,2 kbps, or optionally 230.4 kbps), full-duplex operation concurrently.

Disposition

Comment accepted. Added suitable language to Section 4.4.3.

ID#: 1-142 *(added 1-7-2015)*

Status: Closed

Commenter: CID1

Priority: 0

Comment Type: Technical

Page:

Section:

Issue

ATC v6.10 Section 4.3.2 page 41 (and repeated in section 4.4.1 top of page 44) requires that the Engine Board circuitry "keep the processor in a RESET state any time that VPRIMARY is less than the minimum-specified operating voltage regardless of the state of the POWERUP or POWERDOWN signals" ... I do not agree that this is a requirement.

Please note that in the RESET state currently specified, the Host Board, Field I/O Module, etc are all still operational and, in the case of the Field I/O module, would maintain the current outputs for up to 2 seconds (detection of comm loss). However, if the Engine Board Processor were not placed in a RESET state immediately, then the application (or API or BSP) could instruct the Field I/O clear its outputs immediately. This is just one of the many benefits I can envision.

Proposed Solution

I suggest that the real requirement is that the Engine Board enters a "safe state" and (potentially) suspends application program execution but is allowed to protect its data integrity by updating flash, SRAM, logs, etc and shutting down applications in an orderly fashion.

Disposition

Comment accepted, but proposed solution not adequate to allow standard to be updated.

ID#: 1-143 *(added 1-7-2015)* **Status:** Closed

Commenter: CID1 **Priority**: 0

Comment Type: Technical

Page:

Section:

Issue

ATC v6.10 sections 4.3.2. & (repeated in) 4.4.1 state "The engine board shall provide circuitry to prevent writing to the SRAM ... any time that VPRIMARY is less than the minimum-specified operating voltage regardless of the state of the POWERUP or POWERDOWN signals."

I do not understand why only writes are blocked ... most implementations I have seen block both reads and writes as that is what typical ICs do.

Proposed Solution

I suggest that the text be changed to "The engine board shall provide circuitry to prevent *accessing* the SRAM ... any time that VPRIMARY is less than the minimum-specified operating voltage regardless of the state of the POWERUP or POWERDOWN signals."

Disposition

Comment accepted with following edits (in **bold**):

"The engine board shall provide circuitry to prevent *accessing* the SRAM ... any time that VPRIMARY is less than the minimum-specified operating voltage **for more than 5ms,** regardless of the state of the POWERUP or POWERDOWN signals."

ID#:	2-1	**Status:**	Closed (S2)
Commenter:	CID2	**Priority**:	1
Comment Type:	Technical		
Page:	42		
Section:	4.3.3		

Issue

Requirement for “data bus width of no less than 16 bits” is unnecessarily restrictive. Performance requirements elsewhere adequately cover the intent of this text.

Proposed Solution

Remove text “and a data bus width of no less than 16 bits”.

Disposition

(Accepted by Survey 2)

ID#:	2-2	**Status:**	Closed
Commenter:	CID2	**Priority**:	---
Comment Type:	Editorial		
Page:	53		
Section:	Figure 5-2		

Issue

Text is not clearly legible.

Proposed Solution

Make text be of consistent darkness.

Disposition

Change as proposed.

ID#:	2-3	**Status:**	Closed
Commenter:	CID2	**Priority**:	2
Comment Type:	Technical		
Page:	73		
Section:	6.1.4.1, Display		

Issue

Allow for dedicated contrast keys to control LCD contrast if software contrast control is used.

Proposed Solution

Insert the text “either by dedicated contrast adjustment keys or” immediately after “If using a software controlled contrast, the contrast control shall be accomplished”.

Disposition

Add to Section 6.1.4.1:

> **Display**
>
> The display shall include a Liquid Crystal Display (LCD) or other dot matrix display. It shall include integrated lighting, and shall provide contrast or brightness control as needed by the display technology. The contrast/brightness control may be implemented by dedicated button(s), a rotating knob, or software control via the standard keyboard. The adjustment shall provide the entire contrast/brightness range of the display. The active contrast/brightness level shall be retained across a power cycle. The lighting shall be turned on by keyboard activity or by command. The lighting circuitry shall consume no power when in the off state.
>
> If contrast/brightness is controlled using a rotating knob, it shall increase with clockwise rotation.
>
> If contrast/brightness is software controlled via the standard keyboard, the control shall be accomplished by pressing the (*) key followed by the (+) or (-) key within 1.0 sec to enable adjustment mode. During adjustment mode, the (+) key shall increase contrast/brightness and the (-) key shall decrease it. Pressing the (*) key again shall disable adjustment mode. Adjustment mode shall automatically be disabled after 10 sec of keyboard inactivity. The display shall not send any keys to the Engine Board during adjustment mode.

ID#:	2-4	**Status:**	Closed (S2)
Commenter:	CID2	**Priority**:	1
Comment Type:	Technical		
Page:	76		
Section:	Bell		

Issue

Specifying only 4 kHz is unnecessarily restrictive. Recommend allowing a range of frequencies.

Proposed Solution

Change the text “70 decibels minimum sound pressure at 4 kHz” to read “70 decibels minimum sound pressure at the operating frequency which shall be between 1.5 kHz and 4.5 kHz”.

Disposition

(Accepted by Survey 2)

ID#:	2-5	**Status:**	Closed
Commenter:	CID2	**Priority**:	---
Comment Type:	Editorial		
Page:	93		
Section:	Figure 6-5		

Issue

Note A and Note B are referenced, but not provided.

Proposed Solution

Provide Note A and Note B or else delete the call-outs for Note A and Note B.

Disposition

Callouts deleted.

ID#:	2-6	**Status:**	Closed
Commenter:	CID2	**Priority**:	2
Comment Type:	Technical		
Page:	127		
Section:	9.1.4		

Issue

Isolation test at 500VDC is unnecessarily high; it prevents the use of lower voltage transient suppression devices, thereby reducing the effectiveness of protection.

Proposed Solution

Change the testing voltage from 500 VDC to 100 VDC. This allows for transient suppression devices with clamping voltage values that are more appropriate to AC line voltage.

Disposition

Provide the following guidance statement:

> ***Guidance: Transient protection devices (TSPs) installed between DC ground, equipment ground, and AC may clamp at a voltage that is lower than the 500VDC test voltage. In this case, the TSPs may be removed to conduct isolation tests for the purpose of product qualification. Isolation tests of production units may be performed at the highest voltage that is compatible with the TSP clamp voltage.***

ID#:	2-7	**Status:**	Closed (S2)
Commenter:	CID2	**Priority**:	1
Comment Type:	Technical		
Page:	149-150		
Section:	B.5.3		

Issue

Read() and write() functions reference a timeout (holdover from OS-9). Timeout-like behavior is handled instead by using the poll() and/or non-blocking modes that are described in that section.

Proposed Solution

Strike the references as follows:

read( )
This function allows an application to read data from the open serial port pointed to by **fd**. This function should only be called after a successful open of the respective port. The function reads up to **count** bytes from the receive FIFO. ~~If the number of bytes requested is not available within the configured time limit, the read operation times out if time out operation is configured~~. The function places the requested data in the memory location pointed to by ***buf**.

write( )
This function allows an application to write data to the open serial port pointed to by **fd**. This function should only be called after a successful open of the respective device. The function writes up to **count** bytes to the transmit FIFO. ~~If the number of bytes requested cannot be sent within the configured time limit, the write operation times out~~. The function takes the data from the memory location pointed to by ***buf**.

Disposition

(Accepted by Survey 2)

ID#:	2-8	**Status:**	Closed (S2)
Commenter:	CID2	**Priority**:	1
Comment Type:	Technical		
Page:	149-150		
Section:	B.5.3		

Issue

Section does not describe or reference “packet” mode. “Packet” mode for the SPxs driver should be consistent with the packet handling in B.6 ATC SPxs Synchronous Driver Kernel Level Interface.

Proposed Solution

Modify the read() and write() function descriptions as follows:

read( )
This function allows an application to read data from the open serial port pointed to by **fd**. This function should only be called after a successful open of the respective port. The function reads up to **count** bytes from the ~~receive FIFO~~ next available valid packet received. The function places the requested data in the memory location pointed to by ***buf**. When **count** bytes is less than the number of bytes in the next available packet, the remainder of the packet shall be discarded by the driver. The driver shall not copy the packet’s CRC bytes to **buf**.

write( )
This function allows an application to write data to the open serial port pointed to by **fd**. This function should only be called after a successful open of the respective device. The function writes up to **count** bytes to ~~the~~ ~~transmit FIFO~~ be sent out as a single packet. The function takes the data from the memory location pointed to by ***buf**. The driver shall add the crc bytes to the data copied from **buf** as part of sending the out the packet. If **count** bytes can not be sent as a single packet, the EINVAL error shall be returned and no packet shall be sent.

Disposition

(Accepted by Survey 2)

Modified as proposed.

ID#:	3-1	**Status:**	Closed
Commenter:	CID3	**Priority**:	1
Comment Type:	Technical		
Page:	52		
Section:	5.1.1		

Issue

There are applications of the ATC where no communications interface slot is required by either the intended application or by customer requirements. Adding modem support in this situation adds unneeded cost and complexity to the product.

Proposed Solution

Allow for no communications slot in the standard.

Disposition

(Accepted by Comment 4-3 per Survey 1)

ID#:	3-2	**Status:**	Closed
Commenter:	CID3	**Priority**:	1
Comment Type:	Technical		
Page:	29		
Section:	3.1.3		

Issue

Standard originally required 30 days of RTC hold supplied from the PSU. 6.10 requires 7 of these days to be provided on the engine board.

Proposed Solution

Remove the 7 day requirement from the engine board.

Disposition

See Comment 10-2 for an updated requirement on standby power.

ID#:	3-3	**Status:**	Closed (S2)
Commenter:	CID3	**Priority**:	1
Comment Type:	Technical		
Page:	31-32		
Section:	3.2.1; 3.2.2		

Issue

Standard implies that one Synchronous port be provided to manage/control external field devices and a second for status. I can't see that this was the intent.

Proposed Solution

Merge 3.2.1 and 3.2.2 into the same section, most of the text is the same.

Disposition

(Accepted by Survey 2)

Sections 3.2.1 and 3.2.2 merged into single section 3.2.

ID#:	3-4	**Status:**	Closed
Commenter:	CID3	**Priority**:	---
Comment Type:	Editorial		
Page:	79-80		
Section:	6.1.4.4		

Issue

The heading for 6.1.4.4 starts on page 79, the one line of text is on page 80.

Proposed Solution

Move to same page.

Disposition

Change as proposed.

ID#:	3-5	**Status:**	Closed (S2)
Commenter:	CID3	**Priority**:	0
Comment Type:	Editorial		
Page:	84-92		
Section:	6.2		

Issue

Power supply details part of physical and user interface chapter.

Proposed Solution

Move PSU information into its own chapter.

Disposition

(Accepted by Survey 2)

Chapter Six (6) title changed to more accurately reflect chapter content.

ID#:	3-6	**Status:**	Closed (S2)
Commenter:	CID3	**Priority**:	0
Comment Type:	Editorial/Technical		
Page:	90		
Section:	6.2.6		

Issue

Power supply section only external power requirements.

Proposed Solution

Expand 6.2.6 to include all power rail requirements, I.E Vstandby and VPRIMARY.

Disposition

(Accepted by Survey 2)

Added Section 6.2.7 Internal Power Supply Requirements

ID#:	3-7	**Status:**	Closed
Commenter:	CID3	**Priority**:	0
Comment Type:	Editorial		
Page:	93-94		
Section:	6.3.1.4		

Issue

Section title is Dimensions, but primarily discusses minimum and optional component locations.

Proposed Solution

Move the minimum and optional component locations details into its own section.

Disposition

Component locations have been removed from this section.

See Comment 1-59 for updated component-related requirement and placement details.

ID#:	3-8	**Status:**	Closed
Commenter:	CID3	**Priority**:	2
Comment Type:	Editorial		
Page:	93-94		
Section:	6.3.1.4		

Issue

Section shows a list of minimum and optional components that should be on the front and a list that should be on the rear. The section does not actually state which of the items are optional and which are required.

Proposed Solution

Provide some form of indication of what's optional and what is required.

Disposition

See Comment 1-59 for updated component-related requirement and placement details.

ID#:	3-9	**Status:**	Closed
Commenter:	CID3	**Priority**:	2
Comment Type:	Technical		
Page:	93-94		
Section:	6.3.1.4		

Issue

Section defines a list of minimum and optional components that should be mounted on the rear if it is a rack mount and on the front if it is a shelve mount. This is too restrictive. This prevents a Rack mount ATC from being installed into a cabinet where there is only front access to the cabinet, requiring, for example, the communication slot to be at the front.

Proposed Solution

Merge the two lists and make a note that location is application specific with guidance notes.

Disposition

See Comment 1-59 for updated component-related requirement and placement details.

ID#:	3-10	**Status:**	Closed
Commenter:	CID3	**Priority**:	---
Comment Type:	Editorial		
Page:	95-96		
Section:	7.2.1.2		

Issue

Section title starts on page 95 but actual text starts on page 96.

Proposed Solution

Move section title to page 96.

Disposition

Change as proposed.

ID#:	3-11	**Status:**	Closed (S2)
Commenter:	CID3	**Priority**:	1
Comment Type:	Editorial / Technical		
Page:	118		
Section:	7.4.3		

Issue

The text of 7.4.3 is a little hard to follow and when read conflicts a little with Figure 7.4. Specifically it states that signals of different serial port connectors shall be electrically isolated from one another when on different communication slots, but this is not truly depicted in the figure.

Proposed Solution

Break the requirements of 7.4.3 into separate lines or bullets and update figure 7.4 to reflect the requirements more clearly.

Disposition

(Accepted by Survey 2)

Modified as proposed.

ID#:	3-12	**Status:**	Closed (S2)
Commenter:	CID3	**Priority**:	0
Comment Type:	Technical		
Page:	120		
Section:	8.1.1		

Issue

Suggest adding that the test be run with variable packet length.

Proposed Solution

Suggest adding that the test be run with variable packet length.

Disposition

(Rejected by Survey 2)

ID#:	3-13	**Status:**	Closed
Commenter:	CID3	**Priority**:	0
Comment Type:	Technical		
Page:	120		
Section:	8.1.1		

Issue

The Ethernet test defines 10% loading, but no port speed.

Proposed Solution

Define the port speed at which the Ethernet test should be run at 10M.

Disposition

See Comment 1-131.

ID#:	3-14	**Status:**	Closed (S2)
Commenter:	CID3	**Priority**:	0
Comment Type:	Technical		
Page:	128		
Section:	9.1.9		

Issue

The text for transformers and inductors seems a little out of date compared to current component availability. I think its save to assume that most transformers are going to be PCB mounted and either through hole or SMT technology, lead coloring is not an option.

The same applies to inductors, with the additional fact that manufactures of SMT inductors will only put their name on the part if there is space.

Proposed Solution

Review and modernize.

Disposition

(Accepted by Survey 2)

ID#:	3-15	**Status:**	Closed
Commenter:	CID3	**Priority**:	---
Comment Type:	Editorial		
Page:	130		
Section:	9.1.14.3		

Issue

Title shifted over to far right.

Proposed Solution

Shift back to the left.

Disposition

Change as proposed.

ID#:	3-16	**Status:**	Closed
Commenter:	CID3	**Priority**:	0
Comment Type:	Technical		
Page:	---		
Section:	---		

Issue

I am aware that the following comment is going to be confrontational, but having designed product to the standard more than once, I am struggling to see the customer benefit to the engine board, field IO and LCD micro controller requirement in many applications.

In a module system like the 2070 I see its benefit, but in a non-module system that the ATC and NEMA standards allow for, the engine board, field IO and LCD requirements adds unneeded cost and complexity.

Peek already has a controller that meets the engine board. FIO and LCD micro requirements of the standard, so keeping as is or changing has no impact on us. I point this out, so that its clear that this is being driven by a manufacture need, but more of a member of the working group questioning if this path is the right one, based on working with the standard

The working group needs to take another look at this area. Software compatibility can still be maintained by keeping the micro, operating system, memory, BSP requirements. The standard should allow a vendor to design an ATC where for example the host and engine board can be merged onto one board and the LCD, FIO and main processor micro merged into one device.

Proposed Solution

Discussion.

Disposition

Closed by WG leadership.

ID#:	3-17	**Status:**	Closed (S2)
Commenter:	CID3	**Priority**:	0
Comment Type:	Technical		
Page:	31-32		
Section:	3.2, 3.2.1 and 3.2.2		

Issue

Section 3.2 requires the ATC to include NEMA / type 170 parallel IO hardware to control external field equipment.

Section 3.2.1 and 3.2.2 requires a synchronous serial port to directly interface to ITS/ NEMA TS2 type 1 cabinet or Filed IO to drive a NEMA or 332 cabinet.

What if the ATC is being designed for an application where neither of these are applicable. Currently the standard implies that this would have to be provided regardless, which just adds unneeded cost to the customer.

Proposed Solution

Standard should be changed to allow for an ATC to be designed without the needs of NEMA/170 parallel IO or the synchronous port if the application dictates.

Disposition

(Accepted by Survey 2)

Modified Section 3.2 to make parallel I/O and synchronous serial port optional.

ID#:	3-18	**Status:**	Closed
Commenter:	CID3	**Priority**:	1
Comment Type:	Technical		
Page:	54-55		
Section:	5.2.2		

Issue

The standard implies that +5V standby is for the engine board only, is there a reason why it needs to be connected to the communications slot.

Proposed Solution

Remove +5V standby from the slot.

Disposition

Accepted.

ID#:	3-19	**Status:**	Closed
Commenter:	CID3	**Priority**:	1
Comment Type:	Technical		
Page:	28-29 / 85		
Section:	3.1.3 and 6.2.4		

Issue

What was the original purpose of 30 days of hold up on the RTC, is 30 days needed. Could we reduce it to 7 to 14 days?

Proposed Solution

Discussion.

Disposition

See Comment 10-2 for an updated requirement on standby power.

ID#:	3-20	**Status:**	Closed
Commenter:	CID3	**Priority**:	2

Comment Type: Technical

Page: 95, 112

Section: 7.2.1.1 and 7.2.2.1

Issue

The standard currently defines that the FCU controller is part of the Field IO module, Since the FIO module can be manufacture specific, the manufacture should not be restricted on the location of the FCU controller.

Proposed Solution

Update the standard to allow for the FCU controller to be separate and isolated from the FIO.

Disposition

Changed as proposed.

ID#:	3-21	**Status:**	Closed (S2)
Commenter:	CID3	**Priority**:	1
Comment Type:	Technical		
Page:	47		
Section:	4.4.3		

Issue

The standard allows for 7 manufacturing specific SPI devices. If these SPI devices are microcontroller based then there is no method in the standard for a 3rd party vendor to obtain information required to communicate with the device.

Proposed Solution

Update the standard so that manufactures are required to provide a user manual for all manufacture specific SPI devices. The user manual should include information on the device, function and communication protocol required to drive it.

Disposition

(Accepted by Survey 2)

Already provided in Section 4.4.3.

ID#:	3-22	**Status:**	Closed (S2)
Commenter:	CID3	**Priority**:	1
Comment Type:	Technical		
Page:	47, 141		
Section:	B.3		

Issue

Is the Host EEPROM needed, or is it redundant, most of the information is available through over means or can be stored locally on the engine board via the application running on it.

This was discussed previously, but not submitted as a formal comment and therefore not voted on.

Proposed Solution

Remove the Host EEPROM requirement.

Disposition

(Accepted by Survey 2)

Noted as optional in Section 4 and Section B.

ID#:	3-23	**Status:**	Closed
Commenter:	CID3	**Priority**:	0
Comment Type:	Technical		
Page:	39-41		
Section:	4.2.2		

Issue

There are an insufficient number of logic ground pins on the engine board and does not follow engineering best practices.

Proposed Solution

Increase the number of grounds pins, however this may not be achievable without increasing the number of pins per connector.

Disposition

Comment retracted by commenter.

ID#:	4-1 (*updated 5-28-2014*)	**Status:**	Closed (S2)
Commenter:	CID4	**Priority**:	1
Comment Type:	Technical		
Page:	30		
Section:	3.1.4		

Issue

Use of a WiFi, Blue Tooth or other wireless interface must not be prohibited..

Proposed Solution

Change 3.1.4 text to the following:

"The ATC shall provide means to support the configuration and verification of parameters for particular local applications.

If performed locally, this requirement shall be satisfied by at least one of the following hardware interfaces:

- Front panel display and keyboard(s)
- EIA-232 terminal port, Ethernet port or secure wireless interface for use with a local laptop, tablet or similar device that has appropriate software to support configuration and verification of application parameters by the operator

If performed remotely, this requirement shall be satisfied by the following hardware:

- Serial communications port or
- Ethernet port

This hardware is understood to be matched with applications support and/or BSP support functions supporting NTCIP transfers through remote system interface."

Disposition

(Accepted by Survey 2)

Changed as proposed.

ID#:	4-2 (*updated 5-28-2014*)	**Status:**	Closed (S2)
Commenter:	CID4	**Priority**:	0
Comment Type:	Technical		
Page:	32		
Section:	3.2.1		

Issue

Remove apparent requirement for 4 external serial ports. TEES, NEMA and other users each have their own requirements. Manufactures should be allowed to configure products to their customers' requirements.

Proposed Solution

Change text to the following:

3.2 Manage External Devices

The ATC shall include hardware to provide control, management and monitoring of a variety of field devices through conventional parallel I/O that conforms to the existing NEMA (TS2-2003) and Type 170 and 179 (as reflected by State of California Department of Transportation (Caltrans) Transportation Electrical Equipment Specifications (TEES), and the New York State Department of Transportation (NYSDOT) Transportation Management Equipment Specifications) controller interface specifications, and shall provide serial interfaces as listed below. The serial ports required in the following two subsections may be shared by the requirements of these two subsections.

3.2.1 Manage/Control a Variety of External Field Devices

The ATC shall include hardware to provide management/control of a variety of external field devices. This standard describes required interfaces to provide standardized communication with external devices via industry-standard asynchronous and synchronous serial communication connections.

In support of this requirement, this standard provides multiple serial communications ports on the engine board for possible interface to external field devices:

- Three ports shall support asynchronous (UART) and synchronous (SDLC) communications
- Four ports shall support asynchronous (UART) communications only
- Each port shall support a range of baud rates as defined in Section 4.4.3 Serial Interface Ports of this standard.
- Ports shall be configurable to the various mechanical field connections defined in Section 5.2.3 and the respective modulation and demodulation methods defined in Section 5.3.2 of this standard.
- One of the synchronous serial ports shall be provided to directly interface (select one as appropriate):

- o • To an ITS or NEMA TS2 Type 1 cabinet or
- o • Via a parallel I/O controller to a NEMA TS2 Type 2 or Model 332 cabinet

3.2.2 Monitor the Status of External Field Devices

The ATC shall provide hardware to monitor the status of a variety of external field devices. This standard describes the required interfaces to provide standardized communication with external devices via industry-standard asynchronous and synchronous serial communication connections.

In support of this requirement, this standard provides multiple serial communications ports on the engine board for possible interface to external field devices. (Note that these ports are shared with the four ports required for the management and control of external devices listed in Section 3.2.1.)

- Three ports shall support asynchronous (UART) and synchronous (SDLC) communications
- Four ports shall support asynchronous (UART) communications only
- Each port shall support a range of baud rates as defined in Section 4.4.3 Serial Interface Ports of this standard.
- Ports shall be configurable to the various mechanical field connections defined in Section 5.2.3 and the respective modulation and demodulation methods defined in Section 5.3.2 of this standard.
- One of the synchronous serial ports shall be provided to directly interface (select one as appropriate):
  - o • To an ITS or NEMA TS2 Type 1 cabinet or
  - o • Via a parallel I/O controller to a NEMA TS2 Type 2 or Model 332 cabinet

Disposition

(Accepted by Survey 2)

Selective modifications representing the intent of this comment have been incorporated into Section 3.2.

ID#:	4-3	**Status:**	Closed (S1)
Commenter:	CID4	**Priority**:	0
Comment Type:	Technical		
Page:	52		
Section:	5.1.1		

Issue

Communications interface slot should be optional.

Proposed Solution

Disposition

(Accepted by Survey 1)

ID#:	4-4	**Status:**	Closed (S1)
Commenter:	CID4	**Priority**:	1
Comment Type:	Technical		
Page:	42		
Section:	4.3.3		

Issue

MIPS requirements will determine the required architecture.

Proposed Solution

Remove wait state timing and bus size requirements.

Disposition

(Accepted by Survey 1)

ID#:	4-5 (*updated 5-28-2014*)	**Status:**	Closed
Commenter:	CID4	**Priority**:	1
Comment Type:	Technical		
Page:	45-46		
Section:	4.4.3		

Issue

The industry only uses SDLC and Async. Including SYNC/HDLC adds confusion to the standard since these protocols are not used. External transmit clock is not used by this industry.

Proposed Solution

For SP1 and SP2 remove requirements for SYNC/HDLC/SDLC . Also remove all requirements for SPx_clocks.

For SP3 remove requirements for SYNC/HDLC. Make this type of port ASYNC/SDLC only. Also SP3_TXC_EXT.

For SP5 remove requirements for SYNC/HDLC. Make this type of port ASYNC/SDLC only.

For SP8 remove requirements for SYNC/HDLC. Make this type of port ASYNC/SDLC only.

Disposition

See Comments 1-30, 1-31, 1-32, 1-34 and 1-36 for updated synchronous requirements for serial ports.

(Accepted by Survey 2)

ID#:	4-6 (*updated 5-28-2014*)	**Status:**	Closed (S2)
Commenter:	CID4	**Priority**:	0
Comment Type:	Technical		
Page:	73		
Section:	6.1.4.1		

Issue

The current text regarding the ACTIVE LED is too hardware specific i.e.:. “The cathode of the CPU_ACTIVE LED Indicator shall be electrically connected to the CPU_ACTIVE signal. The current-limiting resistor providing power to the CPU_ACTIVE LED Indicator anode shall be located on the front panel..”

Proposed Solution

Change wording to: “The CPU ACTIVE LED indicator shall be controlled by the CPU ACTIVE signal. When this signal is asserted low, the LED shall illuminate. The CPU_ACTIVE LED Indicator shall be located on the front panel.”

Disposition

(Accepted by Survey 2)

Changed as proposed.

ID#:	4-7	**Status:**	Closed (S1)
Commenter:	CID4	**Priority**:	1
Comment Type:	Technical		
Page:	80		
Section:	6.1.4.6		

Issue

The graphic interface should not be mandatory.

Proposed Solution

Remove this requirement.

Disposition

(Accepted by Survey 1)

ID#:	4-8	**Status:**	Closed (S1)
Commenter:	CID4	**Priority**:	1
Comment Type:	Technical		
Page:	95		
Section:	7.2.1; 7.2.1.1		

Issue

The text refers to “the FCU” in several locations. Many controllers, that are not 2070s, will likely employ an integrated PIO section, not a separate Field Control Unit.

Proposed Solution

Remove reference to “the FCU” . Eliminate section 8.2.1.1 and add “ A microcontroller or similar device shall control the PIO ports.” to this section.

Disposition

(Accepted by Survey 1)

Appropriate language has been added to Section 7.2.

ID#:	4-9	**Status:**	Closed (S1)
Commenter:	CID4	**Priority**:	0
Comment Type:	Technical		
Page:	106		
Section:	7.2.1.7.10		

Issue

Remove requirement for Complex Output Functions.

Proposed Solution

Disposition

(Accepted by Survey 1)

ID#:	4-10	**Status:**	Closed (S2)
Commenter:	CID4	**Priority**:	1
Comment Type:	Technical		
Page:	112		
Section:	7.2.2.1		

Issue

Change “FCU controller” to “microcontroller”.

Proposed Solution

Change “FCU controller” to “microcontroller”.

Disposition

(Accepted by Survey 2)

ID#:	4-12 (*updated 5-28-2014*)	**Status:**	Closed (S2)
Commenter:	CID4	**Priority**:	1
Comment Type:	Technical		
Page:	114		
Section:	7.2.2.5		

Issue

Minimum connector spacing should not be defined in this standard. The connector spacing requirement in this section is based on the 2070-8 NEMA adaptor for the 2070 which has 17" of panel space available. NEMA does not specify the connector spacing or controller width. Many controller manufacturers do not provide this much space between connectors so that they can meet their customer's requirement for smaller controllers that occupy minimum shelf space.

Proposed Solution

Figure 7-2: Remove text: "Spacing Between A, B, C, D Connectors = 3.0 " min, Center to Center.

Disposition

(Accepted by Survey 2)

ID#:	4-13	**Status:**	Closed (S1)
Commenter:	CID4	**Priority**:	0
Comment Type:	Editorial		
Page:			
Section:	3		

Issue

The concept of a PDA is outdated and should be removed from this document. “laptop” may soon be an obsolete term also.

Proposed Solution

Disposition

(Accepted by Survey 1)

ID#:	4-14 (*updated 5-28-2014*)	**Status:**	Closed (S2)
Commenter:	CID4	**Priority**:	0
Comment Type:	Technical		
Page:	33		
Section:	3.3.2.1		

Issue

Remove shelf-mount constraint.

“If used in standard NEMA TS1 or TS2 cabinet, the controller unit shall be shelf-mounted. ”

Proposed Solution

Change wording to:

“If used in standard NEMA TS1 or TS2 cabinet, the controller unit shall be shelf or rack mounted.”

Disposition

(Accepted by Survey 2)

ID#:	4-15 (*updated 5-28-2014*)	**Status:**	Closed (S2)
Commenter:	CID4	**Priority**:	0
Comment Type:	Technical		
Page:	33		
Section:	3.3.2.2		

Issue

Second sentence prohibits the use of any additional microcontrollers or processors on the host board, front panel, comm modules, power supply etc. It does this by requiring that all computational functions be concentrated on an engine board within the ATC.

Proposed Solution

Change sentence to “all standardized computational functions”.

Disposition

(Rejected by Survey 2)

ID#:	4-16	**Status:**	Closed (S1)
Commenter:	CID4	**Priority**:	1
Comment Type:	Editorial		
Page:	28		
Section:	3.1.3		

Issue

The majority of this section contains only basic requirements but this section goes into much greater detail.

Proposed Solution

The detail of this section should be moved to section 4.3.4 (RTC).

Disposition

(Accepted by Survey 1)

Moved as proposed.

ID#:	4-17	**Status:**	Closed (S1)
Commenter:	CID4	**Priority**:	0
Comment Type:	Technical		
Page:	41		
Section:	4.2.2		

Issue

Consider changing reserved pins P1-50 and P2-2 to GROUND to help minimize damage if engine board is hot-plugged.

Proposed Solution

Disposition

(Rejected by Survey 1)

ID#:	4-18	**Status:**	Closed
Commenter:	CID4	**Priority**:	2
Comment Type:	Editorial		
Page:			
Section:	6.3.1.4		

Issue

Minimum / option panel requirements are confusing. Need to identify optional elements

Proposed Solution

Required elements should be in one table and optional elements should be in another.

Disposition

See Comment 1-59 for updated component-related requirement and placement details.

ID#:	4-19 (*updated 5-28-2014*)	**Status:**	Closed (S2)
Commenter:	CID4	**Priority**:	1
Comment Type:	Editorial		
Page:	114		
Section:	7.2.2.5		

Issue

1. Graphic implies that the connectors must be oriented ABCD left to right.

2. Also the text: “D = NEMA “D” Connector, Type MS-3112-24-61P” and “Connector D Pin Configuration: Refer to Model 2070 Controller Standard “ limit the D connector to the TEES specification only. The D connector must remain manufacturer-specific.

Proposed Solution

1. Do not label label connectors or make generic title above connectors i.e. “NEMA MS connectors” or add text: “Connector left to right orientation is manufacturer-defined.”

2. Change text: “Connector D Pin Configuration: Refer to Model 2070 Controller Standard” to: “Connector D Pin Configuration is manufacturer-defined.”

Disposition

(Accepted by Survey 2)

Modified Figure 7-2 as proposed. Changed relevant language.

ID#:	4-20	**Status:**	Closed
Commenter:	CID4	**Priority**:	2
Comment Type:	Technical		
Page:	47-48		
Section:	4.4.3		

Issue

The logic level of the SPI select lines is not defined. Is an active select 0VDC or 5VDC?

Proposed Solution

Define logic voltage for an asserted select line.

Disposition

Replace relevant portions of Section 4.4.3 with the following:

Serial Peripheral Interface Port

The engine board shall provide a Serial Peripheral Interface (SPI) Port. All SPI interface pins shall conform to HCT logic levels where the high-level voltage represents a logic 1 state (de-asserted) and the low-level voltage represents a logic 0 state (asserted).

Four device select lines, SPI_SEL_1 through SPI_SEL_4, shall be used to select the currently active device on the SPI bus. This standard defines two methods for selecting SPI devices:

- Basic Addressing:
  Allows selection of up to four devices by asserting individual select lines
- Expanded Addressing:
  Allows selection of up to 15 devices by asserting combinations of select lines

Support for Expanded Addressing is optional. The SPI device select lines shall be utilized as shown in the following table.

Table 4-X. SPI Device Selection

Selected Device	Basic SPI Address	Expanded SPI Address	SPI_SEL_4 Logic State	SPI_SEL_3 Logic State	SPI_SEL_2 Logic State	SPI_SEL_1 Logic State
(none)	N/A	N/A	1	1	1	1
DataKey	1	1	1	1	1	0
Host EEPROM*	2	2	1	1	0	1
(reserved)	N/A	3	1	1	0	0
SD Card	4	4	1	0	1	1
(reserved)	N/A	5	1	0	1	0
(reserved)	N/A	6	1	0	0	1
(reserved)	N/A	7	1	0	0	0
Manufacturer-Specific	8	8	0	1	1	1
Network Switch 1	N/A	9	0	1	1	0
Network Switch 2	N/A	10	0	1	0	1
Manufacturer-Specific	N/A	11	0	1	0	0
Manufacturer-Specific	N/A	12	0	0	1	1
Manufacturer-Specific	N/A	13	0	0	1	0
Manufacturer-Specific	N/A	14	0	0	0	1
Manufacturer-Specific	N/A	15	0	0	0	0

*The characteristics of the optional Host EEPROM, the required data content and its organization are described in Appendix B.3.1.

Device drivers for SPI devices that use Expanded Addressing shall query the “Expanded SPI Supported” field in the Host EEPROM to determine if Expanded Addressing is supported by the host module. This query shall be performed when the open() function is called. If the Host EEPROM version is less than 2 or if no Host EEPROM is present, then the driver shall assume that Expanded Addressing is not supported, open() shall return -1, and errno shall be set to ENODEV.

To support Engine Board interchangeability, if the host module includes any manufacturer specific SPI devices, then the manufacturer shall provide documentation to allow third parties to write device drivers which access those devices. To support application software portability, if an Engine Board includes any device drivers for manufacturer specific SPI devices, then the manufacturer shall provide documentation to allow third parties to write application programs which utilize those device drivers.

Move the following text to Appendix B.3.1

This EEPROM device shall have the following characteristics:

- Function in a manner similar to a 25020-type (2 kb) SPI EEPROM device
- Have a minimum size of 2 kb organized as 256 words of 8 bits each
- Provide 5V interface signals
- Operate properly with up to a 2.0 MHz SPI clock
- Utilize SPI Mode 0 (CPOL=0, CPHA=0)
- Be write-protected (using *WP pin) whenever POWERUP is LOW
- Be readable from application software during normal ATC operation
- Support the following instruction set:

Instruction	Description	Instruction Format
WREN	Write Enable	0000 X110
WRDI	Write Disable	0000 X100
RDSR	Read Status Register	0000 X101
WRSR	Write Status Register	0000 X001
READ	Read from Memory Array	0000 A8011
WRITE	Write to Memory Array	0000 A8010

Note: A8 represents MSB address bit A8.

ID#:	4-21	**Status:**	Closed (S1)
Commenter:	CID4	**Priority**:	1
Comment Type:	Technical		
Page:	73		
Section:	6.1.4.1		

Issue

Last paragraph defines “typical “character size. That is too restrictive.

Proposed Solution

Change word from “typical” to “minimum” to allow scaling up for larger displays.

Disposition

(Accepted by Survey 1)

ID#:	4-22	**Status:**	Closed
Commenter:	CID4	**Priority**:	2
Comment Type:	Technical		
Page:	73, “Paragraph Display”		
Section:	6.1.4.1		

Issue

This paragraph requires a contrast adjust. Some display technologies do not require a contrast control.

Proposed Solution

Contrast control should be optional or allow substituting a “backlight level” control.

Disposition

Section updated with appropriate language.

ID#:	4-23	**Status:**	Closed
Commenter:	CID4	**Priority**:	2
Comment Type:	Technical		
Page:	74		
Section:	6.1.4.1		

Issue

Wording implies that simultaneous key press operation is required.

Proposed Solution

Wording should specify that simultaneous key operation is optional.

Disposition

Comment retracted by commenter.

ID#:	4-24	**Status:**	Closed (S1)
Commenter:	CID4	**Priority**:	1
Comment Type:	Technical		
Page:	76		
Section:	6.1.4.1		

Issue

38.4 kbps is too limited for the internal, engineboard-to-display connection.

Proposed Solution

Change wording to: “Default configuration shall be: 38.4 kbps, 8 data bits, 1 stop bit, and no parity. Negotiation to a faster bit rate is allowed. Details of the negotiation protocol shall be included in the BSP”.

Disposition

(Accepted by Survey 1)

Default bit rate changed to 115.2kbps.

ID#:	4-25	**Status:**	Closed
Commenter:	CID4	**Priority**:	2
Comment Type:	Technical		
Page:	74		
Section:	6.1.4.1		

Issue

The list of Reset defaults shows that the backlight must be extinguished. Depending on display technology, this could make the display totally unreadable.

Proposed Solution

This default should be removed from the list or made optional.

Disposition

Strike Item 5 from the list on Page 74.

ID#:	4-26	**Status:**	Closed
Commenter:	CID4	**Priority**:	---
Comment Type:	Editorial		
Page:	99		
Section:	7.22.1.7		

Issue

Change ‘specification’ to ‘standard’.

Proposed Solution

Change ‘specification’ to ‘standard’.

Disposition

Change as noted.

ID#:	5-1	**Status:**	Closed
Commenter:	CID5	**Priority**:	2
Comment Type:	Technical		
Page:	41		
Section:	4.3.1		

Issue

60 MIPS, the minimum computational capability should be higher.

Proposed Solution

Increase the minimum computational capability to 500 MIPS. 60 MIPS is equivalent to a processor speed of around 1992. Processors are cheap. Manufacturers will build to the minimum spec. Even if agencies require higher, manufacturers may or may not offer higher capabilities. 500 MIPS is still not very much in terms of today's processors.

Disposition

Use mimimum Coremark of 500 as processor performance benchmark.

ID#:	5-2	**Status:**	Closed (S2)
Commenter:	CID5	**Priority**:	0
Comment Type:	Technical		
Page:	130		
Section:	9.1.5		

Issue

PCB design does not require conformal coating.

Proposed Solution

Require conformal coating with silicone, acrylic, or equivalent conformal coating for environmental protection meeting the requirements of ANSI/IPC-CC-830B. Note - MIL spec is no longer a supported standard and references to use ANSI/IPC-CC-830B.

Disposition

(Accepted by Survey 2)

Language added to Section 9.1.15.

ID#:	5-3	**Status:**	Closed (S2)
Commenter:	CID5	**Priority**:	1
Comment Type:	Technical		
Page:	---		
Section:	---		

Issue

The ATC 5201 standard does not reference the API or require it.

Proposed Solution

ATC 5201 v06.10 should reference ATC API and require all ATC's to be delivered with an API.

Disposition

(Rejected by Survey 2)

ID#:	5-4	**Status:**	Closed
Commenter:	CID5	**Priority**:	2
Comment Type:	Technical		
Page:	122-124		
Section:	8.7, 8.8, 8.9		

Issue

Use of NEMA TS2 for testing temperature, shock, vibration,etc.

Proposed Solution

Suggest using international recognized standards instead of traffic industry specific NEMA TS2. Such as IEEE 1613, IEC 61000, IEEE C37, IEC 60068, and IEC 60255.

Disposition

Closed. Refer to disposition of Comment 1-64.

ID#:	5-5	**Status:**	Closed (S2)
Commenter:	CID5	**Priority**:	0
Comment Type:	Technical		
Page:	14		
Section:	1.3.3		

Issue

Reference of Underwriter's Laboratory.

Proposed Solution

The ATC is an industrial computer very similar to a programmable logic controller. There is no reason I can see why this controller is not listed in accordance with 29 CFR 1910.7 and every state electric code. The controller should be listed to UL 508. It can be listed by any National Recognized Testing Laboratory that is certified to test and list to UL 508. Some states have exemptions for their state electrical boards for traffic signals. Oregon falls into this category. However, for non-traffic signal field devices, we are required to have all electrical products and assemblies be listed. Not listing the controller is only a benefit for the manufacturer. It is not a benefit for the Agency. If the manufacturer was required to list their product, NRTL's will require a quarterly review of their process and restrained their substitution of parts without testing and documentation. This would greatly help quality control.

Disposition

(Rejected by Survey 2)

ID#:	5-6	**Status:**	Closed (S2)
Commenter:	CID5	**Priority**:	0
Comment Type:	Technical		
Page:	44		
Section:	4.4.3		

Issue

Use of serial ports. The standard requires seven (7) serial ports. Why? Serial ports are becoming no longer available in personal computers. The ATC should follow the PC industry. The support of serial ports will more than likely drive the CPU. I do not want to get into situations where we are limited to a CPU due to serial ports that we do not even use.

Proposed Solution

The transportation industry should consider others means, such as CAN bus, Ethernet exclusively, etc. and abandon the use of serial ports.

Disposition

(Rejected by Survey 2)

ID#:	6-1	**Status:**	Closed
Commenter:	CID6	**Priority**:	2
Comment Type:	Technical		
Page:	28-30		
Section:	3.1.3		

Issue

It is unclear if GPS clock time is ever allowed due to the statements like “LINESYNC as clock source (ATC_TIMESRC_LINESYNC): All timing functions and time keeping functions (including OST) shall be referenced to the LINESYNC signal, shall drift with the power line frequency, and shall not attempt to track to a crystal or GPS (or equivalent) reference while external service power is available”. Is GPS time even allowed? Note that the Connected Vehicle concept is expecting GPS time to be provided in the SPaT and Map information. This could be a serious limitation for the ATC 5201 controller and could mean that the ATC 5201 may not be used for Connected Vehicle applications.

Proposed Solution

Clarify how GPS based time is to be used in the ATC.

Disposition

Clarification provided in Sections 4.3.4 and B.7.

ID#:	6-2	**Status:**	Closed
Commenter:	CID6	**Priority**:	2
Comment Type:	Technical		
Page:	28-30, 89		
Section:	3.1.3, 6.2.5.2, 8.10.4		

Issue

A clock drift of + or - 6 to 8 seconds, due to power line drift, could be a safety issue for Connected Vehicle intersection collision avoidance applications. It is unclear what the relationship and limits are in the clocks derived from the power-line based clock signal. Waveform differences can be calculated from the specs but the maximum clock differences are not calculated. (Please see CID 6-1 above for related issue).

Proposed Solution

Clarify what the relationship and limits are on the clock times derived from the power-line clock signal.

Disposition

Existing (proposed) controller time sources are adequate for CV applications.

ID#:	6-3	**Status:**	Closed
Commenter:	CID6	**Priority**:	2
Comment Type:	Technical		
Page:	29		
Section:	3.1.3		

Issue

What are the standard operating system functions mentioned in the statement “When external service power is present, current time/date information shall be maintained by the operating system (OST – Operating System Time) and shall be accessible by the application software through standard operating system functions. ”?

Proposed Solution

Reference where the “standard operating system functions” are defined or list them.

Disposition

Change “operating system” to “Linux/POSIX”.

ID#:	6-4	**Status:**	Closed
Commenter:	CID6	**Priority**:	2
Comment Type:	Editorial		
Page:	31		
Section:	3.1.7		

Issue

This clause starts off with “The ATC shall provide hardware to support the …”. The second bullet lists a “BSP description of control resident operator interface software to control other applications tasks…”. How is the BSP description hardware?

Proposed Solution

Please clarify the second bullet as hardware or clarify the lead in sentence.

Disposition

Add “and software” to first sentence. Remove “If performed locally,”.

ID#:	6-5	**Status:**	Closed (S2)
Commenter:	CID6	**Priority**:	1
Comment Type:	Editorial		
Page:	31-32		
Section:	3.2.1 and 3.2.2		

Issue

Both sections contain the following statement “The standard also provides details of packaging and interfaces that allow this controller to be deployed in industry standard cabinet configurations including: NEMA TS2 Types 1 and 2, ITS and Model 332 cabinets”. However, no reference is made where the packaging and interfaces details are to be found in this standard.

Proposed Solution

Add a reference where the details can be found.

Disposition

(Accepted by Survey 2)

Added as proposed.

ID#:	6-6	**Status:**	Closed (S2)
Commenter:	CID6	**Priority**:	1
Comment Type:	Editorial		
Page:	32-33		
Section:	3.3.1		

Issue

The terminology in this clause uses the word “will” in the second sentence. However, it also uses the terms “at a minimum”. Is this a requirement for the BSP capabilities or can the vendor pick and choose which of the minimum functions their BSP will include?

Proposed Solution

Change the “will” to a “shall”.

Disposition

(Accepted by Survey 2)

ID#:	6-7	**Status:**	Closed (S2)
Commenter:	CID6	**Priority**:	1
Comment Type:	Editorial		
Page:			
Section:	6.2		

Issue

It is unclear what the power supply requirements are based on. Are they constraints to support existing equipment and practices? If there are standards driving these power requirements, please specify said standards.

Proposed Solution

Specify standards driving these power requirements.

Disposition

(Rejected by Survey 2)

ID#:	6-8	**Status:**	Closed
Commenter:	CID6	**Priority**:	---
Comment Type:	Editorial		
Page:	36		
Section:	4.1.1		

Issue

Figure 4-1 is very light and difficult to read.

Proposed Solution

Make the figure easier to read by making the lines darker.

Disposition

Change as proposed.

ID#:	6-9	**Status:**	Closed
Commenter:	CID6	**Priority**:	0
Comment Type:	Technical		
Page:	42		
Section:	4.3.3		

Issue

The SRAM minimum byte size is inconsistent with the DRAM and FLASH memory minimum byte sizes. Is there a reason to treat the SRAM differently (in terms of byte size)?

Proposed Solution

Please clarify.

Disposition

Closed by WG leadership.

ID#:	6-10	**Status:**	Closed (S2)
Commenter:	CID6	**Priority**:	0
Comment Type:	Technical		
Page:	42		
Section:	4.3.4		

Issue

It is unclear how a GPS time is related to the RTC.

Proposed Solution

Please clarify the relationship between the RTC and any GPS time.

Disposition

(Rejected by Survey 2)

ID#:	6-11	**Status:**	Closed
Commenter:	CID6	**Priority**:	1
Comment Type:	Technical		
Page:	42-43, 133-138		
Section:	4.3.5 and Appendix A		

Issue

Assessed the Startup Sequence in 4.3.5 and the Linux Operating System and Minimum Kernel Configuration in Appendix A found that the Linux provided configuration files for many devices and functions. However, without the definitions of the CONFIG_x functions it was not possible to evaluate the contents of the various configuration functions. Where are the CONFIG_x functions defined and by whom?

Some of these configuration file calls (in Appendix A) appear that they might be vendor specific. If so, which ones are vendor specific and which ones are standardized?

A direct tracing of requirements in section 4.3.5 to Appendix A was not possible due to missing definitions for the configuration files.

Proposed Solution

Disposition

Rejected and closed by WG leadership. Information is commonly available online.

ID#:	6-12	**Status:**	Closed (S2)
Commenter:	CID6	**Priority**:	0
Comment Type:	Editorial		
Page:	48		
Section:	4.4.3		

Issue

Please define what “errno” means or correct the spelling (see third paragraph, last sentence on page 48).

Proposed Solution

Please clarify.

Disposition

(Accepted by Survey 2)

ID#:	6-13	**Status:**	Closed (S2)
Commenter:	CID6	**Priority**:	0
Comment Type:	Technical		
Page:	52		
Section:	5.1.3		

Issue

This clause uses the term “may” . If this is a communications Port and it has to use “one or more” serial port on the ATC Interface why not use the term “shall”?

Proposed Solution

Please clarify.

Disposition

(Rejected by Survey 2)

ID#:	6-14	**Status:**	Closed (S2)
Commenter:	CID6	**Priority**:	0
Comment Type:	Technical		
Page:	84		
Section:	6.2		

Issue

It is unclear how the ATC will be tested for “each optional module”. This statement is ambiguous and a product developer could put modules in that are power hogs which may bring the power module to its knees. The intent of this requirement is not clear (it has a shall statement in it).

Proposed Solution

Please clarify the power requirement in this paragraph.

Disposition

(Rejected by Survey 2)

ID#:	6-15	**Status:**	Closed (S2)
Commenter:	CID6	**Priority**:	1
Comment Type:	Technical		
Page:	112-113		
Section:	7.2.2.4		

Issue

The Watchdog, Fault Monitor Voltage Monitor and Monitor Output Power Up Conditions mechanisms all describe a sequence of events to occur. It appears that some of the activities are dependent on an order.

Proposed Solution

Please clarify if there is an order dependency in the activities for these mechanisms.

Disposition

(Accepted by Survey 2)

There is no order dependency.

ID#:	6-16	**Status:**	Closed (S2)
Commenter:	CID6	**Priority**:	1
Comment Type:	Editorial		
Page:	125		
Section:	8.10.3		

Issue

The cycle, or period, is confusing in the test description section. The CU goes through a cycle to being off for 350ms and then on for 650ms. That defines the power off, power on cycle. Then the test says "…for a period of two minutes". What is defined as a period?

Proposed Solution

Please clarify what relationship is between the cycle (of 350ms off and 650ms on) with the period of two minutes.

Disposition

(Rejected by Survey 2)

ID#:	6-17	**Status:**	Closed (S2)
Commenter:	CID6	**Priority**:	1
Comment Type:	Technical		
Page:	126		
Section:	8.10.4		

Issue

The Power outages test requirements outages of more than 2.7 minutes at +25 degrees C and more than 45 seconds at both 37 degrees C and +74 degrees C. As written, the tester can test all three temperatures at power outages of 2.8 minutes for all three and pass the test. Was that the intent?

Proposed Solution

Please clarify the testing time limits.

Disposition

(Rejected by Survey 2)

ID#:	6-18	**Status:**	Closed (S2)
Commenter:	CID6	**Priority**:	1
Comment Type:	Editorial		
Page:	127		
Section:	9.1.1		

Issue

Why must all furnished equipment be new and unused? What happens if a power module is replaced in a ATC that has been in the field for three months and the agency has to retest the ATC? All the rest of the internal ATC equipment is now used, so according to section 9.1.1 this equipment has to be failed.

Proposed Solution

Please clarify what is meant by “Furnished Equipment”.

Disposition

(Rejected by Survey 2)

ID#:	7-1	**Status:**	Closed (S2)
Commenter:	CID7	**Priority**:	0
Comment Type:	Technical		
Page:	n/a		
Section:	TBD		

Issue

It is likely that the next generation traffic control cabinet and other I/O applications may want to use an alternative to the 485 P1 bus such as a CAN bus, Ethernet, USB, 1394, etc. It is suggested that the existing 485 port remains, but we need to add another available cabinet I/O port for next generation equipment. While each may have draw-backs, wouldn't it be prudent to add another well known and widely used field interface bus - - so the ATC has a longer and more flexible life?

Proposed Solution

The standard needs to require the support one or more of the selected buses listed above. By adopting new protocols and new approaches, it is possible to develop a cabinet architecture that leverages other bus configurations and could allow a variety of additional peripheral devices for the traffic controller. This could also allow this controller to interface to newer SCADA devices or utilize industrial control elements within the cabinet for more complex situations.

Disposition

(Rejected by Survey 2)

ID#:	8-1	**Status:**	Closed
Commenter:	CID8	**Priority**:	---
Comment Type:	Editorial		
Page:	72		
Section:	6.1.2		

Issue

Refers to wrong section for Datakey (should be 6.1.4.5).

Proposed Solution

Disposition

Change as noted.

ID#:	8-2	**Status:**	Closed (S2)
Commenter:	CID8	**Priority**:	0
Comment Type:	Technical		
Page:	140		
Section:	B.2		

Issue

The section describing the PIO inputs for /dev/powerdown and /dev/datakeypresent should also state the logical state to be expected for each condition, i.e. is a 1 or 0 returned when a datakey is present?

Proposed Solution

Add clarification in text.

Disposition

(Accepted by Survey 2)

Text added as proposed.

ID#:	8-3	**Status:**	Closed (S2)
Commenter:	CID8	**Priority**:	1
Comment Type:	Technical		
Page:	140		
Section:	B.2		

Issue

The driver for the PIO input devices /dev/powerdown and /dev/datakeypresent should support the fasync function to allow asynchronous notification of state changes of the respective inputs.

Proposed Solution

Add the fasync function to the list of required driver functions in section B.2.

Disposition

(Accepted by Survey 2)

Add the following text to section B.2:

```
fcntl()

intfcntl(intfd, intcmd, ...);

With minimum supported commands:
F_GETFL, F_SETFL, F_GETOWN, F_SETOWN.
```

The fcntl() function shall be used to enable or disable asynchronous notification operations.

```
/* send SIGIO signal on change of state of powerdown */
#include <fcntl.h>
fd = open("/dev/powerdown", O_RDONLY);
signal(SIGIO, &powerdown_handler);
fcntl(fd, F_SETOWN, getpid());
oflags = fcntl(fd, F_GETFL);
fcntl(fd, F_SETFL, oflags | FASYNC);
```

ID#:	8-4	**Status:**	Closed (S1)
Commenter:	CID8	**Priority**:	1
Comment Type:	Editorial		
Page:	155		
Section:	B.5.4		

Issue

The atc_spxs_config structure contains the non-standard type “uint8”.

Proposed Solution

Change to use the C standard type “uint8_t”.

Disposition

(Accepted by Survey 1)

ID#:	8-5	**Status:**	Closed
Commenter:	CID8	**Priority**:	2
Comment Type:	Technical		
Page:	136		
Section:	A.2		

Issue

The mainline Linux kernel version numbering has moved on to the 3.x series and the standard should not restrict the kernel version arbitrarily.

Proposed Solution

Change the text to read “...a Linux-compatible kernel of version 2.6.18 or later”.

Disposition

Change the text to read “...a Linux kernel of version 2.6.18 or later.”

ID#:	8-6	**Status:**	Closed (S2)
Commenter:	CID8	**Priority**:	1
Comment Type:	Technical		
Page:	146		
Section:	B.4.5		

Issue

The asynchronous serial port driver should be specified to support asynchronous notification of change of state of the CTS and DCD signals.

Proposed Solution

Suggest the following wording: "...should support the linux tty flow control ioctl functions TIOCMGET/TIOCMSET with parameters TIOCM_RTS, TIOCM_CTS, TIOCM_CD and asynchronous notification of CTS/DCD changes.

Disposition

(Accepted by Survey 2)

Text added to Section B.4.5.

ID#:	8-8	**Status:**	Closed
Commenter:	CID8	**Priority**:	---
Comment Type:	Editorial		
Page:	39		
Section:	Fig. 4-3		

Issue

The text of the label in the drawing showing the dimension “MAXIMUM ENGINE BOARD ENVELOPE” is wrapped wrongly.

Proposed Solution

Disposition

Change as noted.

ID#:	8-9	**Status:**	Closed
Commenter:	CID8	**Priority**:	---
Comment Type:	Editorial		
Page:	133		
Section:	A.1		

Issue

Item 1) in this section is redundant, since it refers to the section it is now a part of.

Proposed Solution

Disposition

Change as noted.

ID#:	8-10	**Status:**	Closed
Commenter:	CID8	**Priority**:	---
Comment Type:	Editorial		
Page:	44-45		
Section:	4.4.3		

Issue

The parameters for the Communication Loading Test are duplicated in entirety from test section 8.1.1.

Proposed Solution

Replace with a more general statement of requirement to meet the test, referencing the later section 8.1.1.

Disposition

Change as noted.

ID#:	8-11	**Status:**	Closed (S1)
Commenter:	CID8	**Priority**:	1
Comment Type:	Technical		
Page:	155-156		
Section:	B.5.4		

Issue

There is no explanation of the meaning of parameters ATC_SDLC, ATC_HDLC, ATC_SYNC nor what functionality is expected of the SPxs driver for each case.

Proposed Solution

Remove the option and explain that the inherent protocol is that as used in the industry by reference to other standards. Alternatively, provide text specifying the required functionality for each protocol option.

Disposition

(Accepted by Survey 1)

Change the atc_spxs_config_t structure definition in section B.5.4 as follows (remove reference to ATC_SYNC and ATC_HDLC):

```
typedefstructatc_spxs_config
{
       uint8 protocol;     // set the port protocol
                           // (ATC_SDLC)
       uint8 baud;         // set the port baud rate
                           // (ATC_B1200, ATC_B4800, ATC_B9600,
                           // ATC_B19200, ATC_B38400, ATC_B57600,
                           // ATC_B76800, ATC_115200,
                           // ATC_B153600, ATC_B614400)
       uint8 transmit_clock_source;       // (ATC_CLK_INTERNAL, ATC_CLK_EXTERNAL)
       uint8 transmit_clock_mode;         // sets whether the sync transmit clock
                                          // is on continuously or bursts with the
                                          // data frame
                                          // (ATC_CONTINUOUS, ATC_BURST)
} atc_spxs_config_t;
```

Change the Content of the atc_spxs.h file as follows (remove definitions of ATC_SYNC, ATC_HDLC):

// Available communications protocols
#define ATC_SDLC 0 // Default

ID#:	8-12	**Status:**	Closed
Commenter:	CID8	**Priority**:	3
Comment Type:	Technical		
Page:	157		
Section:	B.6.2		

Issue

The ATC API Standard v02.17 does not support SP1 and SP2 devices.

Proposed Solution

Remove SP1 and SP2 from the table in section B.6.2. Also make all synchronous serial requirements relating to SP1 and SP2 optional as there is no usecase stated for this functionality which cannot be met by SP3, SP5 and SP8.

Disposition

Change as proposed.

ID#:	8-13	**Status:**	Closed
Commenter:	CID8	**Priority**:	3
Comment Type:	Technical		
Page:	141		
Section:	B.3.2		

Issue

The scope and polynomials of the CRC fields are not defined.

Proposed Solution

Specify missing information.

Disposition

CRC polynomial to be TEES CCITT 16-4-2-1 with all ones preset.
CRC1 runs from first EEPROM byte through CRC1.
CRC2 runs from Latitude through CRC2.

ID#:	8-14	**Status:**	Closed
Commenter:	CID8	**Priority**:	3
Comment Type:	Technical		
Page:	141		
Section:	B.3		

Issue

It is not clear if the size field covers the whole eeprom device or just the data to the end of CRC1.

Proposed Solution

Clarify that the size field covers the data structure size from the start of eeprom to end of CRC1.

Disposition

Change ‘Size’ field to ‘Length’ field. Add text describing length as number of bytes from beginning of EEPROM through and including CRC1. Change CRC2 to 16-bit.

ID#:	8-15	**Status:**	Closed
Commenter:	CID8	**Priority**:	1
Comment Type:	Technical		
Page:	139		
Section:	B.1		

Issue

The atc_cpu_reset function cannot operate as described (both timing a 125 ms period and not blocking) without support from the /dev/cpureset driver.

Proposed Solution

Remove the requirement for this function and library since it is trivial for an application to implement the same functionality using the /dev/cpureset driver directly.

Disposition

Comment withdrawn by commenter.

ID#:	8-16	**Status:**	Closed
Commenter:	CID8	**Priority**:	2
Comment Type:	Technical		
Page:	41		
Section:	4.3.1		

Issue

The Dhrystone benchmark has several well-known limitations.

Proposed Solution

Specify an equivalent measure of performance using the CoreMark embedded benchmark program.

Disposition

Use mimimum Coremark of 500 as processor performance benchmark.

ID#:	8-17 *(added 1-7-2015)*	**Status:**	Closed
Commenter:	CID8	**Priority**:	2
Comment Type:	Technical		
Page:	133		
Section:	A.1		

Issue

A standard Linux means of network configuration should be specified for the BSP such that required Linux network utilities work consistently.

Proposed Solution

Add a section on Network Configuration requiring the BSP to support the standard persistent files:"/etc/network/interfaces" and "/etc/resolv.conf" and "/etc/hostname" for network interface, nameserver and hostname settings respectively.

Disposition

Solution accepted as proposed.

ID#:	8-18 *(added 1-7-2015)*	**Status:**	Closed
Commenter:	CID8	**Priority**:	2
Comment Type:	Technical		
Page:	133		
Section:	A.1		

Issue

A standard Linux means of external clock configuration should be specified for the BSP such that external reference clocks may be supported consistently.

Proposed Solution

Add a section on NTP Configuration requiring the BSP to provide a full implementation of the reference ntpd program (ntp.org) with support for the “Type 20 generic NMEA GPS reference clock” and the “/etc/ntp.conf” configuration file as a minimum.

Disposition

Solution accepted as proposed, but with NTP V4.2.8 or newer to be required.

ID#:	8-19 *(added 1-7-2015)*	**Status:**	Closed
Commenter:	CID8	**Priority**:	2
Comment Type:	Technical		
Page:	133		
Section:	A.1		

Issue

A standard application startup method should be specified for the BSP such that the platform supports multiple applications consistently.

Proposed Solution

Add a section on application installation and startup requiring that application software shall be installed under the directory "/opt/vendor_name/application_name" and shall provide a startup script or executable program named "/opt/vendor_name/application_name/application_name".

Disposition

Solution accepted as proposed, but with subdirectory /atcapps to be used.

ID#:	8-20 *(added 1-7-2015)*	**Status:**	Open
Commenter:	CID8	**Priority**:	2
Comment Type:	Technical		
Page:	133		
Section:	A.1		

Issue

The BSP should be required to support non-root applications and protect from unnecessary privilege escalation by supporting the standard Linux Security Capabilities feature.

Proposed Solution

Add the requirement to include libcap library and kernel support for capabilities.

Disposition

Solution accepted as proposed.

ID#:	8-21 *(added 1-7-2015)*	**Status:**	Closed
Commenter:	CID8	**Priority**:	2
Comment Type:	Technical		
Page:	133		
Section:	A.1		

Issue

The BSP should be required to support the busybox convention for “initscripts”.

(System Services Screen: uses "initscripts" whereby init script names take the form 'S' followed by a 2-digit number in the range 00-99 giving a relative starting order, followed by the service name, e.g. "S40network". The init scripts reside in "/etc/init.d/" and the System Services Screen persistently enables/disables services as requested by renaming the script for the respective service name).

Proposed Solution

Add a section on init, /etc/inittab and the convention for initscripts to be located in /etc/init.d.

Disposition

Solution accepted as proposed.

ID#:	9-1	**Status:**	Closed (S2)
Commenter:	CID9	**Priority**:	1
Comment Type:	Technical		
Page:	29		
Section:	3.1.3		

Issue

"All timing functions and time keeping functions (including OST) shall be referenced to the LINESYNC signal, shall drift with the power line frequency, and shall not attempt to track to a crystal or GPS (or equivalent) reference while external service power is available."

This has been demonstrated to be a problem in the field when the AC Line frequency is not well controlled, such as third world countries, or where the frequency went out due to some short term event, rolling blackouts or the like. A 10% frequency increase will cause a 3.0 second yellow interval to be detected by the MMU as a Clearance fault.

Proposed Solution

A crystal controlled clock would produce stable short term signal sequences regardless of the AC Line stability. What is the advantage of varying signal interval lengths when the AC Line drifts?

Note that this comment does not apply to the RTC function, but to the field signal sequences.

Disposition

(Rejected by Survey 2)

ID#:	10-1	**Status:**	Closed (S2)
Commenter:	CID10	**Priority**:	1
Comment Type:	Editorial		
Page:	28-30		
Section:	3.1.3		

Issue

This section is supposed to contain functional requirements. Some of the detail here seems out of place, describing detailed specifications rather than functional requirements. This section also refers to things that are aren't defined until later in the document (ATC_TIMESRC_LINESYNC).

Proposed Solution

Limit this section to functional requirements. Move some of the detail to the engine board or testing sections as appropriate.

Disposition

(Accepted by Survey 2)

Changed as noted.

ID#:	10-2	**Status:**	Closed
Commenter:	CID10	**Priority**:	2
Comment Type:	Technical		
Page:	29		
Section:	3.1.3		

Issue

"The RTC shall maintain time/date for a minimum of 30 days without service power applied to the controller and over the full operating temperature range. "

Testing has shown a drastic reduction of standby time at high temperatures. As much as 10 times less can be expected. In 2070 controllers the primary source of hold up power is the power supply module. TEES does not have this same type of hold up requirement, so existing 2070 power supplies would be incapable of meeting this requirement.

Proposed Solution

We suggest a more suitable requirement be determined, preferably one that existing 2070 power supplies can meet.

Disposition

Add Section 3.1.9 as follows:

> **3.1.9 Holdup Power**
>
> The ATC Power Supply and/or Engine Board shall provide holdup power to maintain the RTC and SRAM during power interruptions.
>
> - When service power is not available to the controller, the RTC and SRAM shall be maintained for a minimum of 30 days at 25°C.
> - When standby power from the controller's power supply is not available (either disconnected or depleted), the RTC and SRAM shall be maintained for a minimum of seven days at 25°C.

Modify Section 3.1.3 as appropriate.

ID#:	10-3	**Status:**	Closed
Commenter:	CID10	**Priority**:	2
Comment Type:	Editorial		
Page:	36		
Section:	4.1.1		

Issue

Figure 4-1 shows Ethernet and USB ports located on the "Front Panel". On a 2070, those ports are not located on the front panel.

Proposed Solution

Replacing the label "Front Panel" with "User Interface" to be consistent with section 6.1.

Disposition

Change as proposed.

ID#:	10-4	**Status:**	Closed
Commenter:	CID10	**Priority**:	---
Comment Type:	Editorial		
Page:	39		
Section:	4.2.1		

Issue

Figure 4-3: Maximum Engine Board Envelope label text is split awkwardly.

Proposed Solution

Fix formatting in figure.

Disposition

Change as proposed.

ID#:	10-5	**Status:**	Closed
Commenter:	CID10	**Priority**:	1
Comment Type:	Technical		
Page:	42		
Section:	4.3.3		

Issue

Flash Memory. Although not specified, the requirements imply NAND Flash. There are cost and performance implications related to the type of Flash that is used, NAND vs NOR.

Proposed Solution

Should the flash memory type(s) and intended usage be standardized? This is a question for the working group.

Disposition

Comment withdrawn by commenter.

ID#:	10-6	**Status:**	Closed
Commenter:	CID10	**Priority**:	---
Comment Type:	Editorial		
Page:	44-45		
Section:	4.4.3		

Issue

The following information is duplicated in section 8.1.1, which is where it belongs.

"The following communication channel loads for test purposes, with no other activity present shall be the following:
SP1,2,8 = Continuous full-duplex, asynchronous communications at 19.2 kbps
SP4,6 = Continuous full-duplex, asynchronous communications at 38.4 kbps
SP3S = Continuous full-duplex, synchronous communications at 153.6 kbps
SP5S = Continuous full-duplex synchronous communications at 614.4 kbps
All Ethernet Ports: At 10% loading, with 3% average hits to processor per minute

No other applications or I/O activities are required to be operational during this test."

Proposed Solution

Delete duplicate information from section 4.4.3. Keep it in section 8.1.1.

Disposition

Change as proposed.

ID#:	10-7 (*updated 5-28-2014*)	**Status:**	Closed
Commenter:	CID10	**Priority**:	1
Comment Type:	Technical	**Survey?:**	NO
Page:	45-46		
Section:	4.4.3		

Issue

The meaning of Default Rate = (none) is unclear. It would be better to use the term "unspecified" if that is the intent, or else specify defaults for each port.

Proposed Solution

Replace (none) with more explicit term or with defaults for all ports. Note that if default rates are added for ports that support both Sync and Async modes, then a default should be specified for each mode.

Disposition

No change.

ID#:	10-8	**Status:**	Closed (S1)
Commenter:	CID10	**Priority**:	1
Comment Type:	Technical		
Page:	46		
Section:	4.4.3		

Issue

The max data rate required for SP8 synchronous is 153.6k. If it supported 614.4k, that would allow ITS cabinet to be driven from SP8 (C13S) on the faceplate of a 2070-1C type CPU module, avoiding the need for a separate field I/O module. This capability is mentioned in the guidance under section 7.3.

Proposed Solution

Add requirement that SP8 support synchronous data rate of 614.4k.

Disposition

(Accepted by Survey 1)

Changed as proposed.

ID#:	10-9	**Status:**	Closed
Commenter:	CID10	**Priority**:	2
Comment Type:	Technical		
Page:	48		
Section:	4.4.3		

Issue

Most modern flash drives are formatted with FAT32, so it should be supported.

Proposed Solution

Replacing these 2 sentences:

"To facilitate the transfer of files between dissimilar equipment, all USB memory devices shall be formatted using the FAT16 file system. This provides for a maximum per-device storage capacity of 2 GB (assuming 32 kB clusters)."

with this one sentence:

To facilitate the transfer of files between dissimilar equipment, all USB memory devices shall be formatted using the FAT16 or FAT32 file system.

Disposition

Change text as follows:

"To facilitate the transfer of files between dissimilar equipment, all USB memory devices shall be formatted using a FAT ~~FAT16~~ file system. ~~This provides for a maximum per-device storage capacity of 2 GB (assuming 32 kB clusters~~)."

ID#:	10-10	**Status:**	Closed (S1)
Commenter:	CID10	**Priority**:	0
Comment Type:	Technical		
Page:	49		
Section:	4.4.4		

Issue

Resubmit deferred ATC 5.2b comment 3-12:

It would be useful to have some I/O pins available for manufacturer specific use on the engine board P1 or P2 connectors. The PROG_TEST pins on the P2 connector are an good candidates for this since they are already defined for manufacturer-specific usage. However, this section precludes usage of these pins on production host modules.

Proposed Solution

Delete the following sentence:

"Manufacturers are free to designate these pins for these purposes in any configuration on special engine board test adapter hosts, however all mating PROG_TEST pins on production ATC host modules shall be no-connects."

Disposition

(Rejected by Survey 1)

ID#:	10-11	**Status:**	Closed
Commenter:	CID10	**Priority**:	---
Comment Type:	Editorial		
Page:	52		
Section:	5.1.1		

Issue

Sub-item 4: Wording is awkward. "providing the field connectors and pin assignments conform to this standard".

Proposed Solution

Clarify text. One option is to replace "providing" with "provided that".

Disposition

Change as proposed.

ID#:	10-12 *(updated 5-28-2014)*	**Status:**	Closed (S3)
Commenter:	CID10	**Priority**:	0
Comment Type:	Technical	**Survey?:**	NO
Page:	52		
Section:	5.1.2		

Issue

"Each Communications Interface Slot shall be externally labeled as either A1 or A2 as appropriate. These labels shall be clearly visible when the Communication Module(s) are installed."

How? On a 2070 there is no exposed space on the back of the chassis for labels.

Proposed Solution

Revise or remove labeling requirements.

Disposition

('Remove Label' option accepted by Survey 3)

ID#:	10-13 *(updated 5-28-2014)*	**Status:**	Closed (S3)
Commenter:	CID10	**Priority**:	1
Comment Type:	Technical	**Survey?:**	NO
Page:	52-53		
Section:	5.1.3		

Issue

The reason for including a 2070 compatible communication slot in the ATC is to allow existing 2070 communication modules to be used in the ATC. The labeling requirements for Port A, Port B, etc. described in the first paragraph of this section are not included in the Model 2070 specification, so most existing communication modules do not comply.

Proposed Solution

Revise or remove labeling requirements.

Commenter's Notes

Needs discussion or I could propose options for a multiple-choice vote.

Disposition

('Remove Label' option accepted by Survey 3)

ID#:	10-14	**Status:**	Closed
Commenter:	CID10	**Priority**:	3
Comment Type:	Technical		
Page:	53		
Section:	5.2.1		

Issue

Figure 5.2 shows a total card length of 7.87. TEES 2009 shows a length of 8.66 in figure A9-6.

Proposed Solution

The dimension from TEES should be used since the communication slots are supposed to be 2070 compatible.

Disposition

Change as proposed.

ID#:	10-15	**Status:**	Closed
Commenter:	CID10	**Priority**:	3
Comment Type:	Technical		
Page:	54-55		
Section:	5.2.2		

Issue

The two communication slots show pins for a different Ethernet port in each slot. However the 2070 backplane only carries signals for a single Ethernet port, see TEES 2009 figure A9-5, so the 2070 can not accommodate the requirement for different Ethernet ports in each slot.

Proposed Solution

Provide the same Ethernet port in both slots to be compatible with the 2070 communication slots A1 and A2.

Disposition

Comment rejected. Separate ports to remain as is.

ID#:	10-16	**Status:**	Closed
Commenter:	CID10	**Priority**:	---
Comment Type:	Editorial		
Page:	58		
Section:	5.2.3.2		

Issue

C60P section: Extra period at end of first sentence.

Proposed Solution

Remove it.

Disposition

Change as proposed.

ID#:	10-17	**Status:**	Closed (S1)
Commenter:	CID10	**Priority**:	1
Comment Type:	Editorial		
Page:	58,61,61		
Section:	5.2.3.2		

Issue

In general, EIA-232 has been replaced with EIA-574 where appropriate, but a few references were missed.

Proposed Solution

For consistency, use EIA-574 instead of EIA-232 in the following references.

C50J: EIA-574 compatible
C60P: EIA-574
C21S and C22S (DE-9S versions): EIA-574
C2S and C20S: EIA-574 compatible and FSK

Disposition

(Accepted by Survey 1)

Standard updated throughout to reference EIA-694 (electrical standard, similar to RS-232 but supporting higher data rates) with connectorization specifics per individual application.

ID#:	10-18	**Status:**	Closed (S1)
Commenter:	CID10	**Priority**:	1
Comment Type:	Technical		
Page:	58,73,79		
Section:	5.2.3.2, 6.1.3, 6.1.4.2		

Issue

Heater power is included in the C60P pinout in section 6.1.3, but not included in the SP6 pinout in section 5.2.3.2. They are the same port so they should have the same pinout. Furthermore, section 6.1.4.2 says "Note that the HEATER POWER signal is optional with actual voltage and current at the manufacturer's discretion and with no expectation of interchangeability." That doesn't make sense. If heater power is an external interface on the C60P connector, then it needs to be standardized. However, that is difficult because different heaters have different power requirements.

Proposed Solution

Heater power should not be provided on C60P. This would involve the following changes.

- Change the pinout in section 6.1.3 to be the same as 5.2.3.2 (i.e. remove heater power on pin 6).

- Delete the following sentences in section 6.1.4.2:

"Note that the HEATER POWER signal is optional with actual voltage and current at the manufacturer's discretion and with no expectation of interchangeability. DCGND3 is the related ground signal (pin 5). "

Disposition

(Accepted by Survey 1)

Implemented as proposed.

ID#:	10-19	**Status:**	Closed
Commenter:	CID10	**Priority**:	---
Comment Type:	Editorial		
Page:	72		
Section:	6.1.1		

Issue

Colons on next line after "plus one of the following".

Proposed Solution

Fix formatting in two places.

Disposition

Change as proposed.

ID#:	10-20	**Status:**	Closed
Commenter:	CID10	**Priority**:	---
Comment Type:	Editorial		
Page:	72,80,115		
Section:	6.1.2, 6.1.4.5, 7.3		

Issue

"Data Key" should be "Datakey".

Proposed Solution

Fix spelling in 3 places.

Disposition

Change as proposed.

ID#:	10-21	**Status:**	Closed
Commenter:	CID10	**Priority**:	2
Comment Type:	Technical		
Page:	73		
Section:	6.1.4.1		

Issue

Resubmit deferred ATC 5.2b comment 3-14:

The requirement for use of the * key for software contrast control precludes the use of a custom "CONTRAST" key on a keyboard with additional keys.

Proposed Solution

Allow the method of software control to be determined by the manufacturer. Delete the following sentences:

“If using a software controlled contrast, the contrast control shall be accomplished by pressing the(*) key to enable the adjustment, followed by the (+) key to darken and the (-) key to lighten the contrast. By pressing the (*) key again will disable the contrast adjustment.”

Disposition

New language for Section 6.1.4.1. See also Comment 4-22.

Display

The display shall include a Liquid Crystal Display (LCD) or other dot matrix display. It shall include integrated lighting, and shall provide contrast or brightness control as needed by the display technology. The contrast/brightness control may be implemented by dedicated button(s), a rotating knob, or software control via the standard keyboard. The adjustment shall provide the entire contrast/brightness range of the display. The active contrast/brightness level shall be retained across a power cycle. The lighting shall be turned on by keyboard activity or by command. The lighting circuitry shall consume no power when in the off state.

If contrast/brightness is controlled using a rotating knob, it shall increase with clockwise rotation.

If contrast/brightness is software controlled via the standard keyboard, the control shall be accomplished by pressing the (*) key followed by the (+) or (-) key within 1.0 sec to enable adjustment mode. During adjustment mode, the (+) key shall increase contrast/brightness and the (-) key shall decrease it. Pressing the (*) key again shall disable adjustment mode. Adjustment mode shall automatically be disabled after 10 sec of keyboard inactivity. The display shall not send any keys to the Engine Board during adjustment mode.

ID#:	10-22	**Status:**	Closed
Commenter:	CID10	**Priority**:	2
Comment Type:	Technical		
Page:	73		
Section:	6.1.4.1		

Issue

If software controlled contrast is used, the setting needs to be remembered so the user doesn't have to reset it every time the controller is rebooted.

Proposed Solution

Add new requirement:

If software-controlled contrast adjustment is used, the selected contrast level shall be stored in a non-volatile manner and automatically restored at power up.

Disposition

Add language to Section 6.1.4.1: “Contrast and brightness levels shall be persistent across power outages.”

ID#:	10-23	**Status:**	Closed
Commenter:	CID10	**Priority**:	2
Comment Type:	Technical		
Page:	76		
Section:	6.1.4.1		

Issue

Resubmit deferred ATC 5.2b comment 3-15:

The bell frequency is specified here as 4 KHz, but the 2070 specification calls for 2 KHz. These should be consistent.

Proposed Solution

Change requirement to 2 KHz to match 2070 specification.

Disposition

Change to nominally 2 to 4 khz.

ID#:	10-24	**Status:**	Closed
Commenter:	CID10	**Priority**:	2
Comment Type:	Technical		
Page:	76		
Section:	6.1.4.1		

Issue

"The interface shall be configured for 38.4 kbps, 8 data bits, 1 stop bit, and no parity. "

This data rate is not fast enough to allow refresh of a 16x40 display at 10 Hz. If you do the math, a minimum of 64k bps is needed. However, there are many existing 2070 controllers with 4 and 8 line displays that run at 38.4k, so we don't want to break compatibility with those.

Note: ATC standard requires a minimum of 8 lines x 40 characters in the "Display" section on page 73.

Proposed Solution

Require higher data rate only for displays with more than 8 lines.

Replace:
" The interface shall be configured for 38.4 kbps, 8 data bits, 1 stop bit, and no parity. "

With:
"For displays with 8 lines, the interface shall be configured for 38.4 kbps, 8 data bits, 1 stop bit, and no parity. For displays with more than 8 lines, the interface shall be configured for 115.2 kbps, 8 data bits, 1 stop bit, and no parity."

Disposition

Set default baud rate for SP6 to 115.2Kbps for all configurations. Review standard for other locations which specify default rate for SP6 (Sections 4.4.3, 8.1.1).

ID#:	10-25 *(updated 5-28-2014)*	**Status:**	Closed (S3)
Commenter:	CID10	**Priority**:	1
Comment Type:	Editorial	**Survey?:**	NO
Page:	79		
Section:	6.1.4.2		

Issue

"Intent is that heater is controlled by front panel activity only."

Heater is software controlled, as described elsewhere.

Proposed Solution

Delete sentence:

"Intent is that heater is controlled by front panel activity only."

Disposition

(Accepted by Survey 3)

ID#:	10-26	**Status:**	Closed
Commenter:	CID10	**Priority**:	---
Comment Type:	Editorial		
Page:	79		
Section:	6.1.4.3		

Issue

Language is singular, but there are multiple Ethernet ports.

Proposed Solution

Replace singular "A 10/100 Ethernet port is used" with plural "10/100 Ethernet ports are used".

Disposition

Change as proposed.

ID#:	10-27 *(updated 5-28-2014)*	**Status:**	Closed (S2)
Commenter:	CID10	**Priority**:	1
Comment Type:	Technical		
Page:	80		
Section:	6.1.4.5		

Issue

"Datakey Keyceptacle (KC4210, KC4210PCB or equal) with a 2Mb Datakey™ (SFK2Mb with 64 KB sector size). "

This is located under 6.1.4 User Interface Operation, but does not provide any operational information.

Also, what is the intent of listing the specific Datakey model SFK2Mb? There should be no requirement in the standard for Datakeys to be provided with each controller. That is a procurement spec issue.

Proposed Solution

Delete the following text:

" with a 2Mb Datakey™ (SFK2Mb with 64 KB sector size). "

Disposition

(Accepted by Survey 2)

ID#:	10-28	**Status:**	Closed
Commenter:	CID10	**Priority**:	2
Comment Type:	Technical		
Page:	80		
Section:	6.1.4.6		

Issue

"If a display device such as an LCD is provided, then it shall support a mandatory graphics interface. The graphics interface shall operate as specified herein."

This could be interpreted as saying that all LCD displays must support graphics, which is not the intent.

Proposed Solution

Replace:

"If a display device such as an LCD is provided, then it shall support a mandatory graphics interface. The graphics interface shall operate as specified herein."

with:

"If a display device supporting bit-mapped graphics is provided, then it shall support a mandatory graphics interface as specified herein."

Disposition

Modify Section 6.1.4.6 as follows:

> **6.1.4.6 Graphics Interface**
>
> Support for bit-mapped graphics is optional. If the manufacturer chooses to support bit-mapped graphics, then the following graphics interface shall be supported. The graphic interface commands are supplemental to the normal configuration command codes and functionality specified in Section 6.1.4.1.

ID#:	10-29	**Status:**	Closed (S1)
Commenter:	CID10	**Priority**:	1
Comment Type:	Technical		
Page:	84		
Section:	6.1.5		

Issue

What is the purpose of this section? The user interface is not an interchangeable module unless it is an external module that attaches to C60P. Section 5.2.3.2 already specifies voltage and current for the power pin on C60P.

Proposed Solution

Delete this section entirely.

Disposition

(Accepted by Survey 1)

ID#:	10-30	**Status:**	Closed
Commenter:	CID10	**Priority**:	2
Comment Type:	Technical		
Page:	84-91		
Section:	6.2.x		

Issue

There is no mention of A/C line frequency range in this section. It is not mentioned until section 8 (Test Procedures) where a requirement of 60 +/- 3 Hz is stated. That information belongs somewhere in this section. The standard should also state the expected behavior if the line frequency is outside the 60 +/- 3 Hz range since this affects the time of day clock accuracy.
Note: Some portable generators produce frequencies outside the range of 60 +/- 3 Hz.

Proposed Solution

Add line frequency requirements somewhere in section 6.2.

Disposition

Make the following sectional changes (in **bold**):

Page 89: 6.2.5.2 LINESYNC

The LINESYNC signal shall be generated by a crystal oscillator, which shall synchronize to the AC service power line at 120 and 300˚ **during normal AC service power conditions (see section 6.2.6.1). During loss of AC service power (holdup time) or when the AC service power line frequency is outside the normal range, the LINESYNC signal shall be** a continuous square-wave signal with 5 VDC amplitude, 60 Hz, 8.333 ms half-cycle pulse duration, and 50 ± 1% duty cycle. The output shall have drive sink capability of 16 mA. The monitor circuit shall compensate for missing pulses and line noise during normal operation. The circuit shall begin generating the LINEYNC signal no later than POWERUP signal becoming active and shall continue generating the LINESYNC signal during power failure until the +5 VDC power supply drops below its minimum voltage as specified in Section 6.2.6 (hence the LINEYNC signal shall be present whenever the POWERUP signal is HIGH at a minimum).The crystal oscillator used to generate this signal shall have an accuracy of ± 0.005% at 25 C. The relationship of AC Service Voltage (top trace) and LINESYNC (bottom trace) is shown in Figure 6-4.

Page 91: 6.2.6.1 Line and Load Regulation

The power supply shall meet the external voltage tolerances for minimum and maximum loads called out. The normal AC service power conditions are defined as follows:

a. 332 Parallel I/O Version: 100VAC to 135 VAC ± 2 VAC, **60 ± 3 Hz**
b. NEMA: 89 VAC to 135 VAC ± 2 VAC, **60 ± 3 Hz**

ID#:	10-31	**Status:**	Closed (S1)
Commenter:	CID10	**Priority**:	1
Comment Type:	Technical		
Page:	97		
Section:	7.2.1.3		

Issue

Millisecond Counter: It would be helpful to specify the initial value of the millisecond counter to ensure uniform operation across vendors.

Proposed Solution

Add sentence: "The MC shall be initialized to zero at Power Up."

Disposition

(Accepted by Survey 1)

ID#:	10-32	**Status:**	Closed
Commenter:	CID10	**Priority**:	2
Comment Type:	Technical		
Page:	97		
Section:	7.2.1.3		

Issue

Communications Loss: Nowhere in section 7.2.1 is a comm loss clearly defined. Is the timer reset by any command, only by a set outputs command, … ?

Also, In section 7.2.2.4, a specific Power Up sequence is defined for the NEMA I/O module, but there is no equivalent in section 7.2.1 for 332 cabinets.

Proposed Solution

Add text to clarify Communications Loss operation and Power Up sequence.

Disposition

Make the following changes:

Page 97: Communications Loss

~~Following Power Up initialization, the FCU loss of communications timer shall indicate loss of communications with the ATC until the user program sends the request module status message to reset the "E" bit and a subsequent Set Outputs Command is processed.~~

The FCU shall enter the Communications Loss state following Power Up initialization or hardware reset, or if no valid command message has been received from the engine board within the previous 2.0 sec. During the Communications Loss state, all outputs shall be OFF and the communications loss bit "E" shall be set in the Request Module Status response.

The FCU shall exit the communications loss state only after a Request Module Status command has been received with the Communications Loss bit "E" set. All outputs shall remain OFF until a subsequent Set Outputs command has also been received.

Page 98: Outputs

Simultaneous assertion of all outputs shall occur within 100 µs. Each output shall be capable of being individually configured in state to ON, OFF, or a state synchronized with either phase of LINESYNC. During the Communications Loss state, all outputs shall be OFF. ~~The condition of the outputs shall only be ON if the PI/O continues to receive active communications from the engine board. If there is no valid communications with the engine board for 2.0 s,all outputs shall revert to the OFFcondition, and the PI/O status byte shall be updated to reflect the loss of communication from the engine board.~~

Page 113: Communications Loss

~~An Engine Board / Field IO processor communications loss during operation shall cause all outputs to go FALSE (inactive) state and shall set the Comm Loss Flag. Fault Monitor and Voltage Monitor outputs shall be in the FALSE (inactive) state.~~

- ~~(Per 8.2.1.7.1.3 the comms loss time expires after 2 seconds)~~

During the Communication Loss state, all outputs shall be OFF, and the Fault Monitor and Voltage Monitor states shall be set to FALSE (inactive).

ID#:	10-33	**Status:**	Closed (S1)
Commenter:	CID10	**Priority**:	0
Comment Type:	Editorial		
Page:	108		
Section:	7.2.1.7.12		

Issue

This command/response is not supported by ATC controllers, so there is no need to describe its operation.

Proposed Solution

Delete everything in the Guidance paragraph except for this sentence:

"This is a legacy Model 2070 message command / response for Field I/O modules with Datakey resident."

Disposition

(Accepted by Survey 1)

ID#:	10-34	**Status:**	Closed
Commenter:	CID10	**Priority**:	---
Comment Type:	Editorial		
Page:	109,142		
Section:	7.2.1.7.13, B.3.2		

Issue

Most references to "ATC2070" have been replaced with "Model 2070", but a few were missed.

Proposed Solution

Replace "ATC2070" with "Model 2070" in 2 places.

Disposition

Change as proposed.

ID#:	10-35	**Status:**	Closed (S1)
Commenter:	CID10	**Priority**:	1
Comment Type:	Technical		
Page:	115		
Section:	7.3		

Issue

Internal ports 1 and 5 are labeled as 10/100, but the Engine Board ports are only required to support 10 Mbps as shown in figure 7-3 on following page.

Proposed Solution

Replace 10/100 Mbps with 10 Mbps in these sentences:

"Port 1: Internal 10/100 Mbps Port to Engine Board ENET1 "
"Port 5: Internal 10/100 Mbps Port to Engine Board ENET2 "

Disposition

(Rejected by Survey 1)

ID#:	10-36	**Status:**	Closed
Commenter:	CID10	**Priority**:	0
Comment Type:	Editorial		
Page:	133-134		
Section:	A.1		

Issue

Item 2), Notes

These notes seem a little out of place. They are talking about system startup operation rather than elaborating on the list of drivers.

Proposed Solution

Remove the notes from item 2) and put them in a new item 5) which is dedicated to startup requirements. The 2nd paragraph in section B.4.1 is also related to startup, and could be consolidated here.

Disposition

Comment withdrawn by commenter.

ID#:	10-37	**Status:**	Closed
Commenter:	CID10	**Priority**:	2
Comment Type:	Technical		
Page:	134		
Section:	A.1		

Issue

Item 2), note a.

Option 1: This can't be implemented. The Engine Board doesn't know if a key is pressed continuously.
Option 2: This is too complicated/confusing, and the justification is not apparent.

Allowing options here is not desirable because it allows inconsistencies between manufacturers in a user-facing feature.

Proposed Solution

The standard should define one method that all manufacturers will use. The method should also be user friendly (no hidden jumpers, etc.).

Disposition

In section A.1 subsection 2),change note “a” to read as follows.

Notes:

a. /dev/sp4 shall be used for the Linux console (and bootloader console if applicable). The default communications settings for the console shall be 115.2 kbps, no parity, 8 data bits, 1 stop bit. /dev/sp4 shall also be available for use by application programs as a general purpose communication port. By default the console shall be disabled at power up and the controller shall not send any external output from /dev/sp4 during bootup. The ATC shall query any attached front panel device on /dev/sp6 to determine if the <ESC> key is pressed and held down during bootup. If so, the Linux console shall be temporarily enabled until the next bootup. To activate the console, the user should press and hold the front panel <ESC>key continuously from power up until any console output appears.

In section 6.1.4.1, in the table “Inquiry Command-Response Codes”, change the text in the FUNCTION column for the key press inquiry to read as follows.

“Return key code if key is currently pressed, else return NULL (hex 00)”

ID#:	10-38	**Status:**	Closed (S1)
Commenter:	CID10	**Priority**:	1
Comment Type:	Technical		
Page:	134		
Section:	A.1		

Issue

Item 3), BusyBox

The standard requires that ftpd be included in BusyBox. It should allow the use of alternate ftp servers.

Proposed Solution

Add the following statement to the BusyBox Remarks section:

"ftpd is optional in BusyBox if an alternate ftp server is provided."

Disposition

(Accepted by Survey 1)

ID#:	10-39	**Status:**	Closed
Commenter:	CID10	**Priority**:	2
Comment Type:	Editorial		
Page:	136		
Section:	A.1		

Issue

The last sentence "Resolution of the POSIX timers shall be 100 µs or better." is redundant and can be removed. The resolution requirement is already stated earlier under item 3) in the remarks for hrtimers.

Proposed Solution

Delete redundant sentence at very end of section A.1 on page 136:

"Resolution of the POSIX timers shall be 100 µs or better."

Disposition

Change as proposed.

ID#:	10-40	**Status:**	Closed
Commenter:	CID10	**Priority**:	2
Comment Type:	Technical		
Page:	136		
Section:	A.2		

Issue

"This O/S kernel shall be a Linux-compatible 2.6.x kernel (where x >= 18)." Kernel version 3.x is a numbering change rather than a significant technical change from version 2.6. The kernel should not be restricted to version 2.6.x.

Proposed Solution

Replace:

"This O/S kernel shall be a Linux-compatible 2.6.x kernel (where x >= 18)."

with:

"This O/S shall use a Linux-compatible kernel version 2.6.18 or newer."

Disposition

Change the text to read “...a Linux kernel of version 2.6.18 or later.”

ID#:	10-41	**Status:**	Closed (S1)
Commenter:	CID10	**Priority**:	0
Comment Type:	Technical		
Page:	139		
Section:	B.1		

Issue

The atc_cpu_reset() function is unnecessary. Application programs have full control of the CPU Reset signal via the /dev/cpureset driver that is described in section B.2.

Proposed Solution

Section B.1 should be removed in its entirety.

Disposition

(Accepted by Survey 1)

ID#:	10-42	**Status:**	Closed (S1)
Commenter:	CID10	**Priority**:	0
Comment Type:	Technical		
Page:	140		
Section:	B.2		

Issue

Read(): Description only mentions powerdown and datakey. It should also be possible to read the current states of cpuactive and cpureset.

Proposed Solution

Replace:

"This allows for reading the state of the Powerdown signal and for determining whether or not the Datakey is inserted."

with:

"This allows for reading the state of the Powerdown signal and for determining whether or not the Datakey is inserted. It also allows reading of the current state of cpuactive and cpureset."

Disposition

(Accepted by Survey 1)

ID#:	10-43	**Status:**	Closed (S1)
Commenter:	CID10	**Priority**:	0
Comment Type:	Technical		
Page:	145		
Section:	B.3.3		

Issue

This external file reference doesn't belong here.

Proposed Solution

Delete sentence:

"IOCTL requests are defined according to Linux conventions as described in “Documentation/ioctl/ioctl-decoding.txt”. "

Disposition

(Accepted by Survey 1)

ID#:	10-44	**Status:**	Closed
Commenter:	CID10	**Priority**:	---
Comment Type:	Editorial		
Page:	145		
Section:	B.3.4		

Issue

struct atc_datakey needs to be reformatted to fix awkward wrapping.

Proposed Solution

Fix formatting.

Disposition

Change as proposed.

ID#:	10-45 *(updated 5-28-2014)*	**Status:**	Closed (S2)
Commenter:	CID10	**Priority**:	1
Comment Type:	Technical		
Page:	145		
Section:	B.3.4		

Issue

struct atc_datakey does not include the "Startup Override" byte that is included in the Model 2070 datakey header. Is it intentional that this feature is not supported in the ATC?

Note: It can be argued that the ATC doesn't need this feature since it has a similar feature using USB.

Proposed Solution

Add guidance statement explaining that the 2070 Startup Override feature is not supported. Use the USB startup feature instead.

Proposed guidance statement: "The Startup Override feature of the Model 2070 is not supported."

Disposition

(Accepted by Survey 2)

ID#:	10-46	**Status:**	Closed (S1)
Commenter:	CID10	**Priority**:	1
Comment Type:	Technical		
Page:	146		
Section:	B.3.4		

Issue

For compatibility with the Model 2070 datakey header format, struct atc_datakey should include padding for the reserved area that is defined in TEES. Assuming that the 2070 startup override feature is not supported, then that byte can also be treated as reserved.

Proposed Solution

Insert the following reserved bytes at the end of the structure after gateway:

uint8 reserved[36];

Disposition

(Accepted by Survey 1)

ID#:	10-47 *(updated 5-28-2014)*	**Status:**	Closed (S3)
Commenter:	CID10	**Priority**:	0
Comment Type:	Technical	**Survey?:**	NO
Page:	146		
Section:	B.3.4		

Issue

Is it intentional that key types 1 and 2 are omitted from the table of Datakey types? If yes, then perhaps an explanatory guidance statement would be helpful.

Proposed Solution

Add key types 1 and 2 to table, or else add guidance statement explaining why they are omitted.

Commenter's Notes

Needs discussion to clarify intent.

Disposition

(Rejected by Survey 3)

ID#:	10-48	**Status:**	Closed (S2)
Commenter:	CID10	**Priority**:	1
Comment Type:	Technical		
Page:	146		
Section:	B.4.1		

Issue

If there are multiple USB ports, then the path to the startup file may be different.

Note: The USB startup script is a security hole. May need to change or remove this feature.

Proposed Solution

Replace:

"POSIX shell script named /media/usb/startup on an attached USB device"

with:

"POSIX shell script named startup located in the root of an attached USB device"

Disposition

(Rejected by Survey 2)

Add M.Gallagher's comment text as requirement:

"The BSP and it's hotplug configuration should cause the root of the USB storage device to be mounted such that the file name is as required."

ID#:	10-49	**Status:**	Closed (S1)
Commenter:	CID10	**Priority**:	1
Comment Type:	Technical		
Page:	146		
Section:	B.4.1		

Issue

" If the ATC has multiple USB ports, only the first port is required to support this automatic startup feature."

If there are multiple USB ports, then the ports need to be labeled so users can identify which port is the first one.

Proposed Solution

Modify sentence at the end of B.4.1 to read:

"If the ATC has multiple USB ports, then only the first port is required to support this automatic startup feature, and that port shall be labeled on the exterior of the controller."

Disposition

(Accepted by Survey 1)

ID#:	10-50	**Status:**	Closed
Commenter:	CID10	**Priority**:	2
Comment Type:	Technical		
Page:	146		
Section:	B.4.3		

Issue

The filesystem used should be one that is designed for flash memory to ensure reasonable performance and lifespan.

Proposed Solution

Add sentence:

"The filesystem used shall be designed for flash memory and shall provide wear leveling, for example JFFS2, UBIFS, etc."

Disposition

Modify section B.4.3 as follows:

> **B.4.3 Non-Volatile Storage**
>
> "Standard Linux drivers shall be provided to implement filesystem(s) on the provided non-volatile storage device(s). Features appropriate to the storage technology shall be included to maximize the lifespan of the storage device(s) and to prevent corruption due to power interruptions."

ID#:	10-51	**Status:**	Closed (S1)
Commenter:	CID10	**Priority**:	1
Comment Type:	Technical		
Page:	147,157		
Section:	B.5.3, B.6.3		

Issue

The ioctl FIONREAD that was defined in the ATC 5.2b comment 1-83 disposition did not get added to ATC 6.10. The comment disposition added it to the kernel level driver (ATC 6.10 section B.6.3), but it would be useful as a feature of the standard synchronous driver also (ATC 6.10 section B.5.3).

Proposed Solution

Add FIONREAD feature to sections B.5.3 and B.6.3.

Disposition

(Accepted by Survey 1)

Added as proposed.

ID#:	10-52	**Status:**	Closed
Commenter:	CID10	**Priority**:	2
Comment Type:	Technical		
Page:	163		
Section:	B.7		

Issue

ATC_TIMESRC_EXTERNAL1 and ATC_TIMESRC_EXTERNAL2 are not adequately defined.

Proposed Solution

Need to define how the driver is supposed to operate if the time source is set to external 1 or 2.

Disposition

EXTERNAL1 and EXTERNAL2 removed per previous comment resolution. Comment closed.

ID#:	10-53	**Status:**	Closed (S1)
Commenter:	CID10	**Priority**:	0
Comment Type:	Editorial		
Page:	General		
Section:	General		

Issue

Some references to other standards like Model 2070 and ITS cabinet include the SDO names AASHTO/ITE/NEMA, others don't. The usage should be consistent. Examples where the SDOs are mentioned: pg 70, 95, 100. Most other places the SDO names are not included.

Proposed Solution

Suggest that Model 2070 and ITS cabinet be associated with the relevant external documents and SDOs in one place, such as the References and/or Glossary section. Then the SDO names do not need to be repeated with each reference to the associated standard within the body of the document.

Disposition

(Accepted by Survey 1)

ID#:	10-54 *(updated 5-28-2014)*	**Status:**	Closed (S3)
Commenter:	CID10	**Priority**:	1
Comment Type:	Technical	**Survey?:**	NO
Page:	General		
Section:	General		

Issue

It would be helpful for the standard to include guidance regarding procurement and the intended responsibilities of the hardware and application software vendors. Given the "open system" model with separation between hardware and software, the question is often raised about who is responsible for ensuring proper operation when vendor A's hardware is used with vendor B's software. The guidance could clarify that hardware vendors are responsible for designing and building products compliant to the ATC standard. Application vendors are responsible for ensuring their software runs on ATC compliant hardware, accommodating any implementation differences between hardware vendors that are allowed by the standard. Users should specify this responsibility of the application vendor when procuring software.

Proposed Solution

Add guidance. Somewhere in section 2 might be the best place for it.

Commenter's Notes

Needs discussion. I think other procurement/user guidance topics have also been discussed.
If we aren't going to address these things now, then the comment can be withdrawn.

Disposition

(Accepted by Survey 3)

ID#:	10-55 *(added 6-27-2014)*	**Status:**	Closed
Commenter:	CID10	**Priority**:	2
Comment Type:	Technical		
Page:	91		
Section:	6.2.6.1 Line and Load Regulation		

Issue

The voltage range for the "332 Parallel I/O Version" is listed as 100 to 135 VAC. This disagrees with TEES 2009 section 9.5.6.1 which says 90 to 135. The lower threshold value of 100 VAC is also incompatible with the POWERDOWNvoltage thresholdslisted in section 6.2.5.1. This appears to be a simple error rather than an intentional deviation from TEES.

In addition, a variability of +/- 2 VAC is listed here for both the 332 and NEMA versions, but neither NEMA nor TEES includes that variability.

Proposed Solution

Change the lower voltage threshold for the 332 version from 100 VAC to 90 VAC.
Eliminate the +/- 2 VAC variability for both the 332 and NEMA versions.

In section 6.2.6.5, delete the text "(i.e. 100 VAC or 89 VAC)" or change it to "(i.e. 90 VAC or 89 VAC)".

Disposition

Accepted as proposed.

ID#:	10-56 *(added 6-27-2014)*	**Status:**	Closed
Commenter:	CID10	**Priority**:	2
Comment Type:	Technical		
Page:	86		
Section::	6.2.5.1 Power Down and Power Up		

Issue

The POWERDOWN voltage thresholds listed here for NEMA cabinets do not provide a safety margin to ensure that the controller is operational before the MMU detects proper voltage on voltage ramp up. The controller power restore threshold can be as high as 90 + 2 = 92 VAC. NEMA TS2 section 4.4.1 allows the MMU to detect proper voltage as low as 89 + 3 = 92 VAC.

To ensure that the MMU doesn't trigger a latched fault condition during power restoration, the max controller power restore threshold should be lower than the min MMU proper voltage threshold.

Proposed Solution

Decrease the power loss and restoration thresholds for NEMA cabinets from 85/90 to 84/89.
Loss of AC service power = 84 +/- 2 VAC
Restoration of AC service power = 89 +/- 2 VAC

Disposition

Remove +-2V ranges. Reduce thresholds to 85/89. Add language to note indeterminate POWERDOWN level when AC service voltage is between Loss and Restoration levels.

NOTES